THE FAR EASTERN REVIEW

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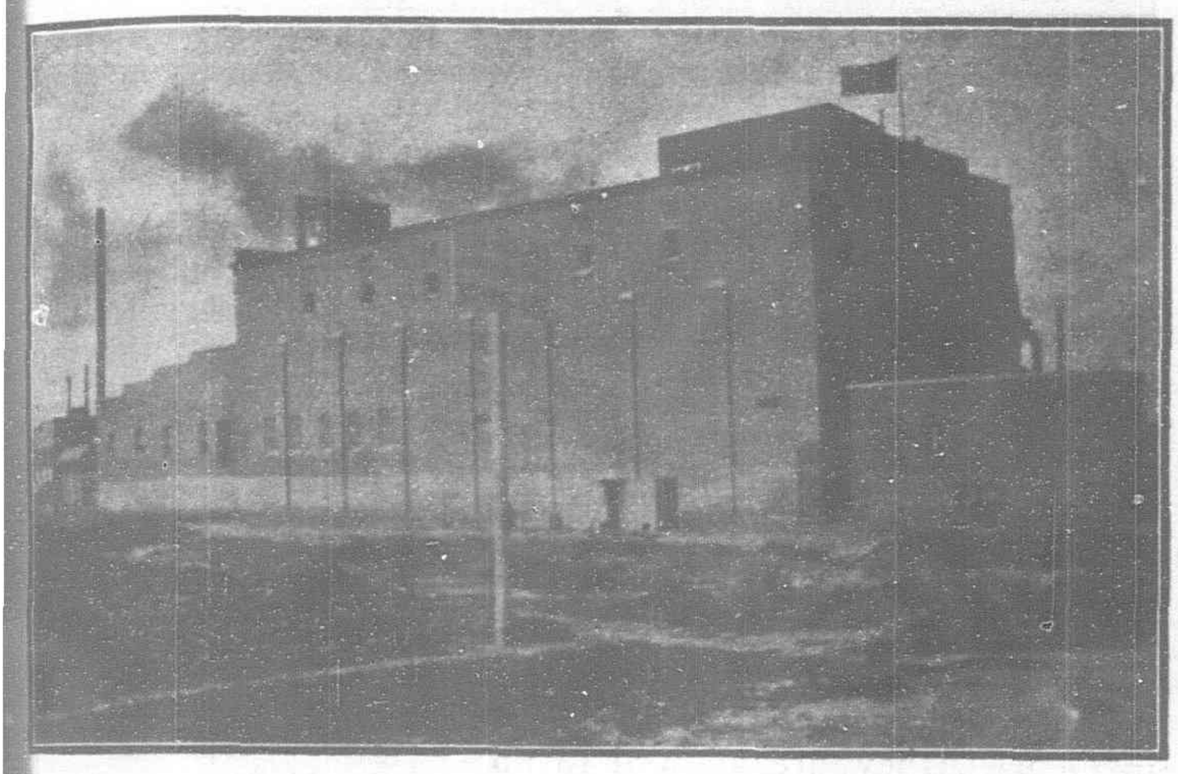
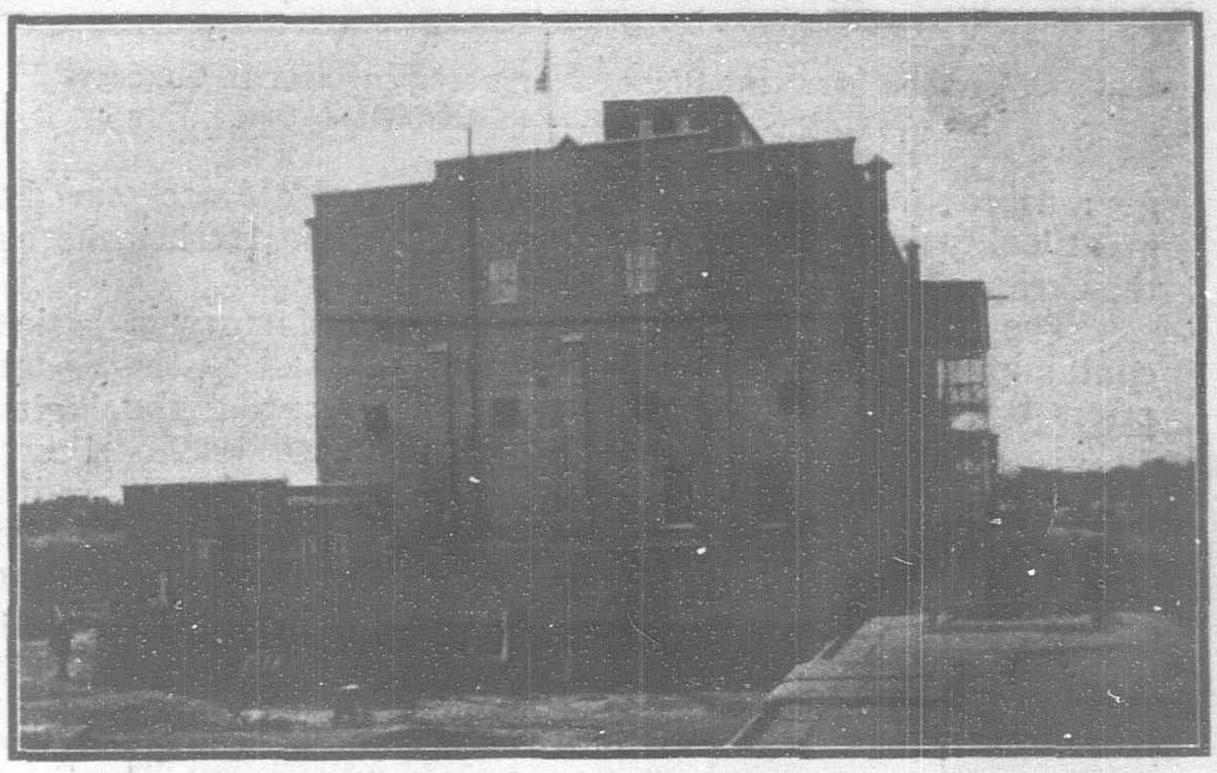


SIDE ELEVATION ON AMOS BIRD CO.'S EGG PRODUCTS FACTORY. BOILER ROOM IN DETACHED BUILDING AT REAR



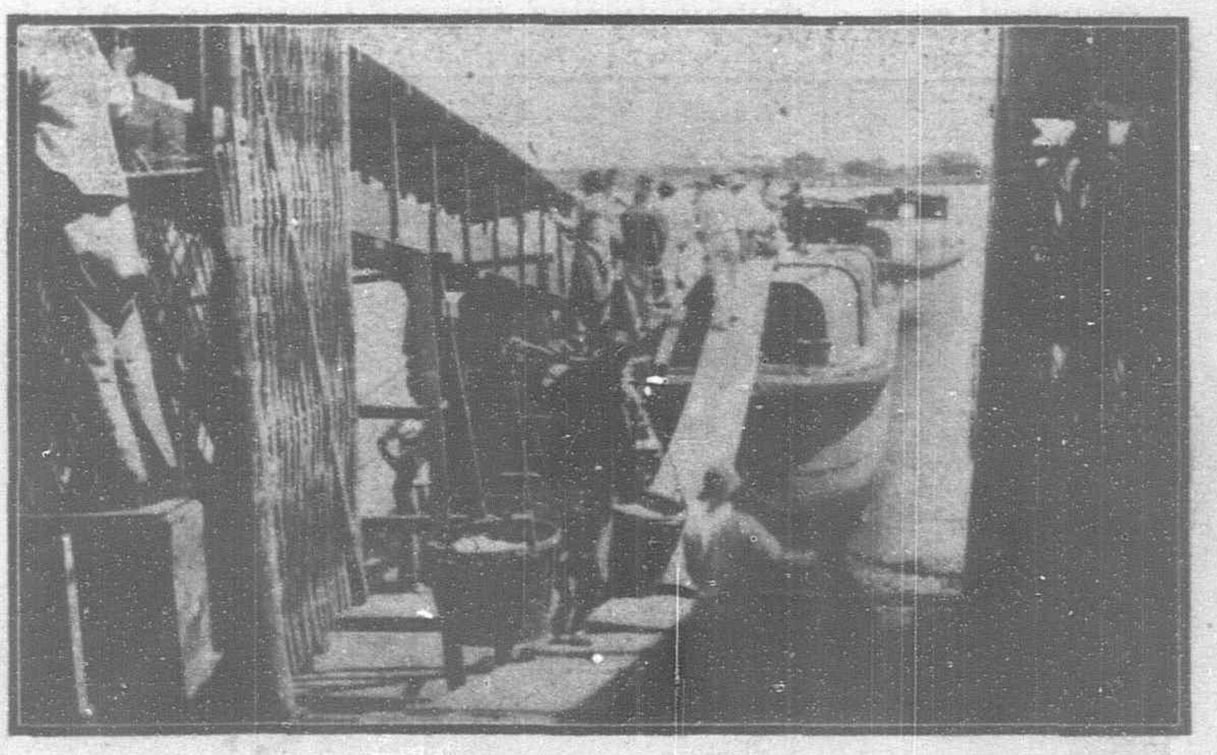
EGG PRODUCTS PLANT FROM WATER FRONT, WITH LIGHTER IN FOREGROUND PLACED READY FOR LOADING

SANITARY EGG PRODUCTS PLANT IN SHANGHAI

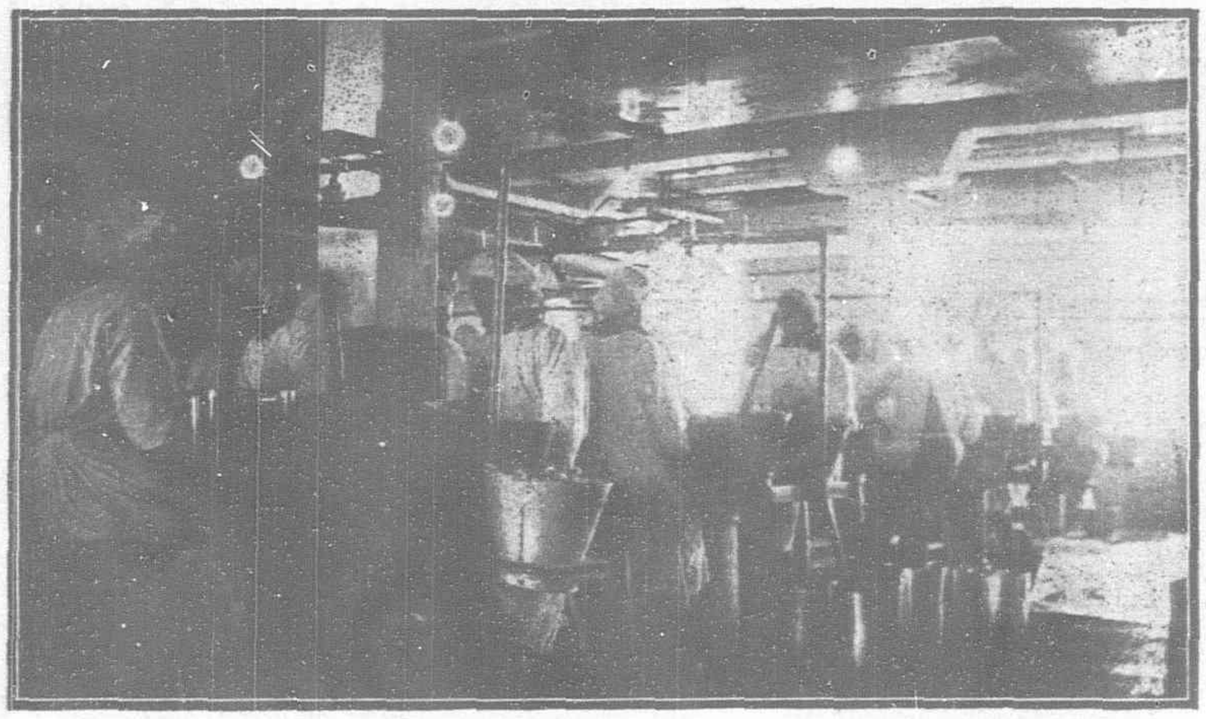
To those who think that China is the last word in lack of sanitation, it may come as a surprise to know that here in Shanghai is now in operation a plant for the manufacture of egg products, in which the principles of factory sanitation are carried to the highest point of application. The factory is that of the Amos Bird Company of Boston and is located in the Yangtszepoo district. occupying a site on the Whangpoo which gives perfect receiving and shipping facilities. The plant is housed in a three story brick structure that has the distinction of having the only basement in Shanghai, the floor at high tide, being considerably below the water level of the river that flows outside its walls.

China is known as a land of cheap raw material, and eggs are no exception. It may astonish the American housewife who pays fifty cents a dozen in winter (even in summer the price of eggs in the memory of the writer has never gone lower than fifteen cents a dozen), to know that eggs delivered at the doors of this plant are only $9.00 Mexican or $4.50 gold a thousand and that in summer the price sometimes goes down as low as twelve dozen eggs for one Mexican dollar, approximately fifty cents gold. And these are fresh eggs which the grocers in the United States would label "strictly fresh eggs" since in China, a land where everything is up-side-down to foreign nations, the older an egg is, the more valuable it becomes, and eggs

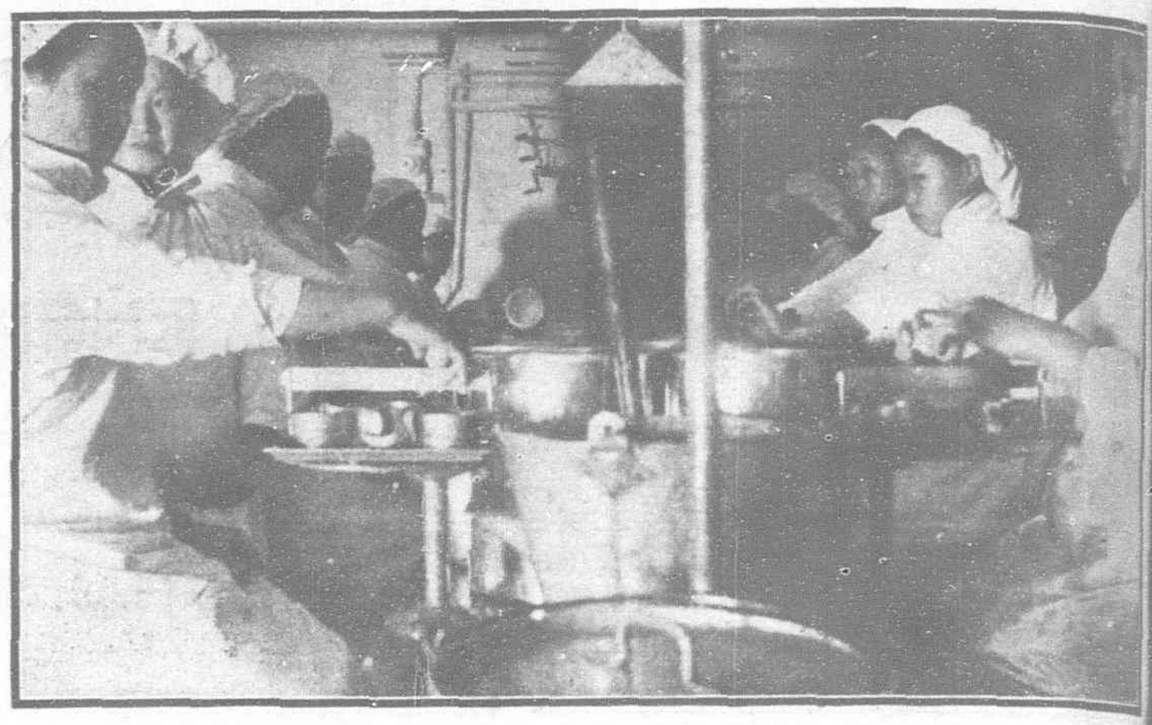
GRAVITY CONVEYOR FROM FACTORY TO LIGHTER



RECEIVING RAW MATERIAL, CARRIED IN BASKETS BY COOLIES WHILE FINISHED PRODUCT IS PASSING DOWN COVERED CHUTE AT LEFT



General View of Breaking Room constructed entirely in Concrete and Metal to Permit thorough Sterilization



Group of Girls Breaking and Separating Eggs into Sterilized apparatus of Nickel

guaranteed to be at least one hundred years old are served as great delicacies at Chinese banquets while the fresher the egg the cheaper it is.

The eggs are received at the door of the factory in baskets containing approximately one thousand eggs and as the factory offers better prices for choice eggs, it is securing the highest class of egg produced within a circle of probably a hundred mile radius. The eggs are brought into the examining room where the contents of the baskets are gone over and all cracked or otherwise damage eggs are separated. The eggs are then candled by Chinese who pass them before the candling lamps at the rate of five hundred an hour. The candling rooms are kept in a temperature not exceeding 56 degrees Fahrenheit, the range of temperature in the building used both for freezing and for drying eggs, being from zero to upwards of 100 degrees Fahrenheit in the freezing and drying rooms respectively.

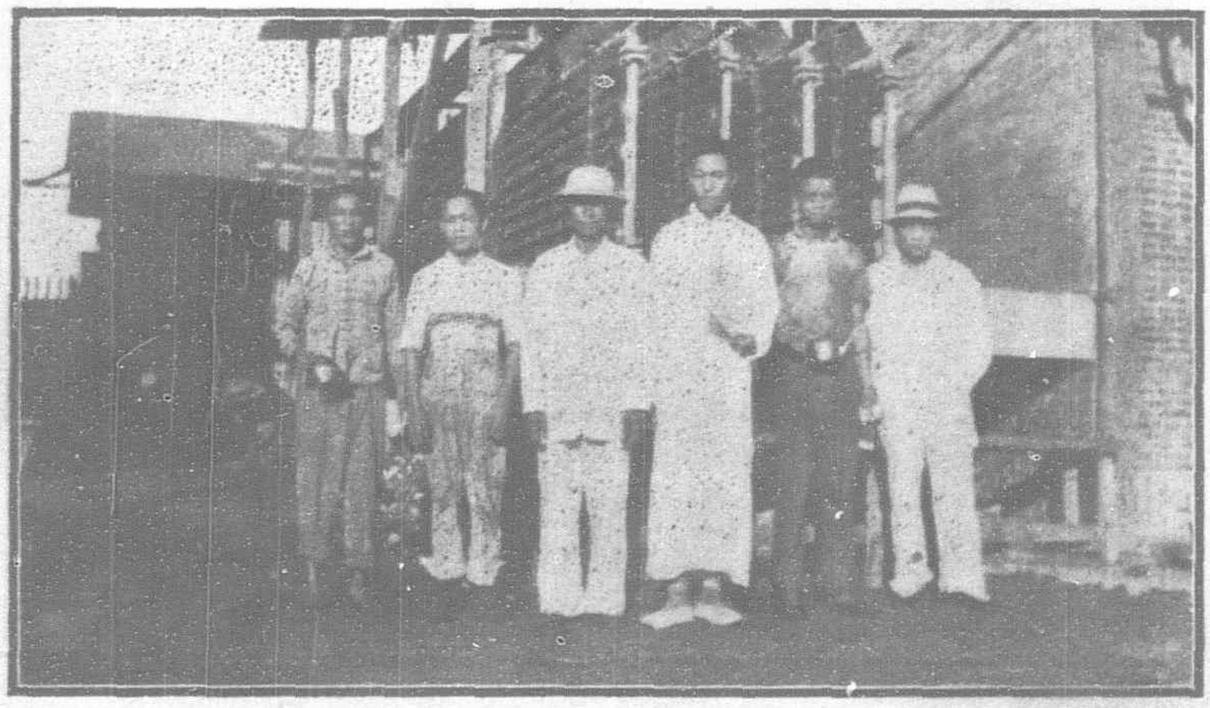
One of the Workers

From the candling room the fresh eggs with unbroken shells are taken to the breaking room, which, in point of sanitary appliances and attention to details of personal hygiene scarcely is surpassed by the operating room of a hospital. In fact the general effect of the room, aside from its low temperature, is that of a well ordered hospital but with ten white capped and aproned nurses, where the ordinary hospital would have but one. The factory now employs one hundred girls each of whom is expected to break and separate from fifteen hundred to two thousand eggs a day of twelve hours. Owing to the factory paying higher wages than other similar plants and working only six days a week instead of seven, which is the rule of the cotton mills and silk filatures of Shanghai, it can pick and choose in its labor so that the type of girl employed in the egg breaking room is far above the standard of any other Chinese factory and a composite picture of them all probably would come nearer the Chinese idea of feminine beauty than any other one hundred girls that can be found in Shanghai.

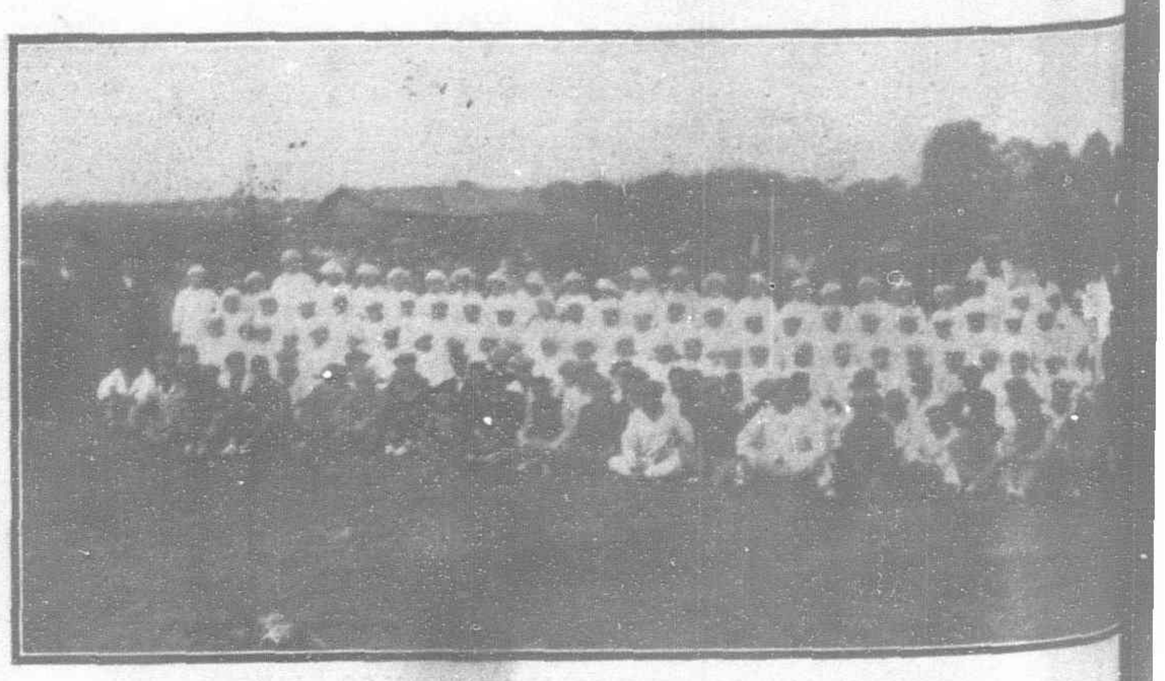
As the workers enter in the morning, they are dressed in freshly sterilized clothing furnished by the factory and after their nails are manicured, they are allowed to proceed to the work room.

The breaking room is solid concrete and is sterilized each day as carefully as the operating room of a hospital. The girls are seated on metal stools at low zinc tables. Before each one of them is a curious appliance which mechanically separates the white of the egg from the yolk. The girl takes an egg from the can into which they have been counted by the candlers, and with the right hand cracks it on the bar of the separating machine. The breaking is then finished by a dexterous movement of the fingers which permit the egg to drop into a shallow cup where the yolk is caught and the white allowed to drain off the sides. Only three eggs are broken before the contents of the cup containing the yolks are inspected as to the odor, since an egg may be musty and yet look all right to the eye. If any egg prove musty they are thrown away and a freshly sterilized cup brought into place.

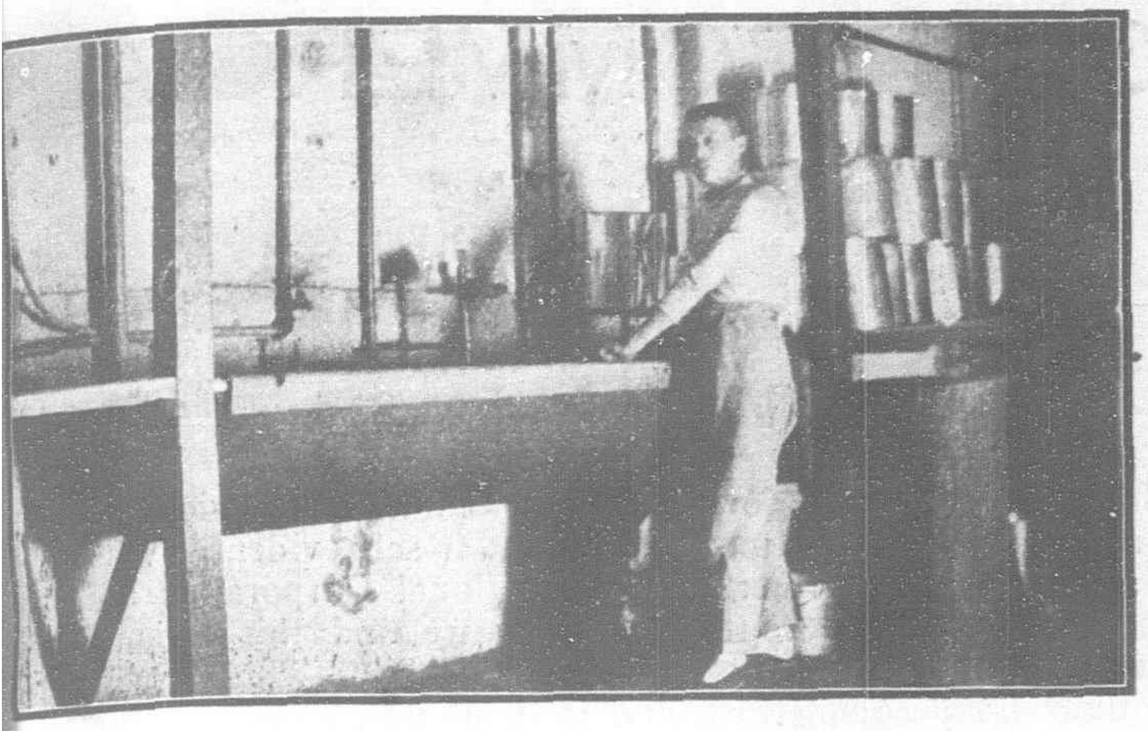
The Forewoman



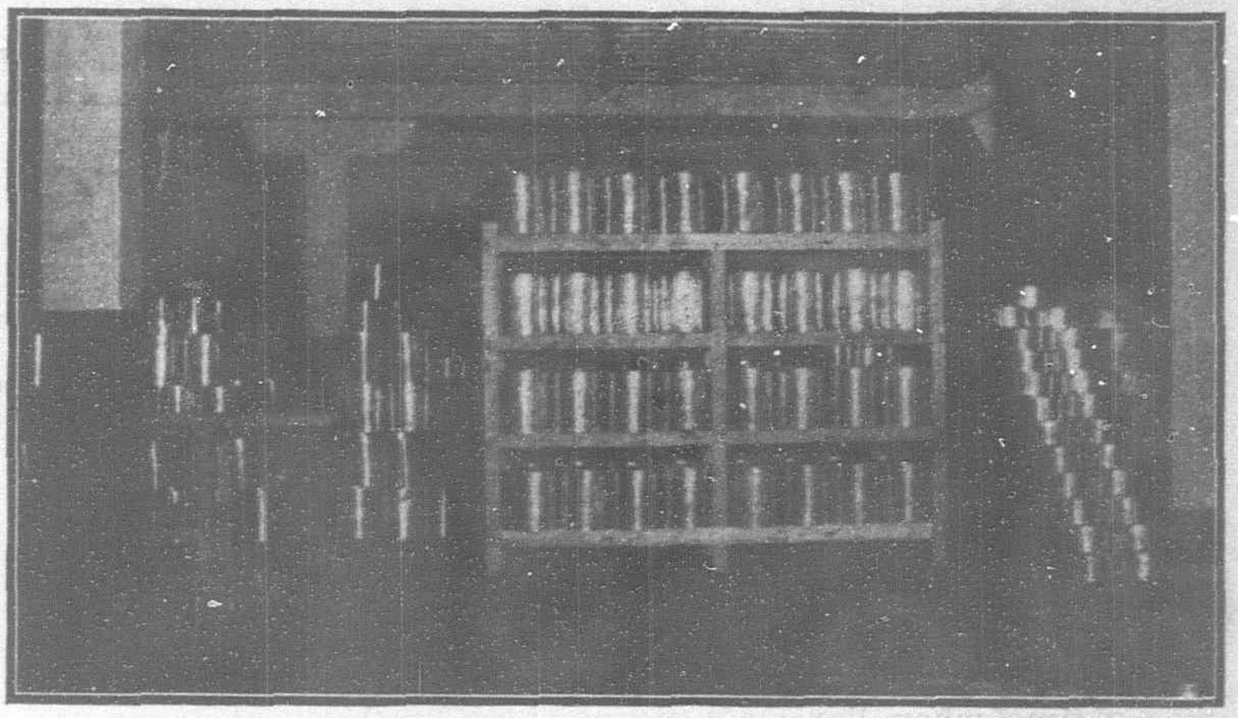
Types of Men Workers—in Background Steam Condenser



Group of Workers Showing Breaking Room Girls in White Uniforms like Nurses



LIVE STEAM ROOM FOR STERILIZING CANS USED FOR SHIPPING FROZEN EGGS



SECTION OF REFRIGERATING ROOMS SHOWING METHOD OF STACKING CANS FOR FILLING WITH MIXED YOLKS AND WHITES

At present the factory is drying only the yolks and these are collected from the smaller cans of the separator into larger cans after which they are passed through strainers that break the yolks and thoroughly incorporate them so that the yolks when run off from the strainers, form a thoroughly homogeneous liquid ready for drying.

The drying room is worthy of an extended description as it embodies all the latest features in the sanitary handling of this food product. In the antechamber, the visitor is struck by the curious apparatus that hangs from the ceiling to within seven feet of the floor. It looks much as though some enormous bees or wasps had invaded the place and hung their fluted combs from its ceiling. This is the air filter, through whose pores every particle of air must pass before it reaches the heaters on its way to the drying machines. From the strainers the air goes to the heating room where it passes over pipes filled with steam at a pressure of forty pounds and is then sent by means of a blower into the drying apparatus. The egg comes out in flakes and allowed to cool to a temperature slightly above the freezing point. It then goes to the packing room where it is placed in boxes lined with wax paper, which are then stencilled and ready for shipment.

From the time that the egg was rapped against the breaking bar of the separating machine, no hand has touched it and it has been under strictly sterile conditions so far as human ingenuity could make them. The one offence for which a worker in the drying or packing rooms will be instantly discharged, is that of handling any of the products. The egg yolk when placed on board the steamer for shipment is in a form of dry flakes. These flakes if put in water immediately form yolk of egg. By taking dry whites and yolks in proper proportion, and allowing them to absorb the proper amount of moisture, they can be made into an omelet, scrambled eggs and in fact any form of egg dish except fried and poached eggs, although of course their use is more largely among bakers than in the household.

So much for the hot side of the plant. For the freezing of eggs the separation and straining are carried out just as for the manufacture of dry yolks, only after the straining the large cans are taken to the freezing chambers. Here the temperature is kept close to zero Fahrenheit and the separate whites and yolks are poured into cans standing on racks that line the walls of the freezing chamber.

The cans which contain thirty pounds of egg, either white or yolk, as the case may be, are as sterile as live steam at a hundred and twenty degrees centigrade can make them before the eggs are frozen in them. They are packed two cans to the case and are shipped as fast as cold storage facilities can be secured on the steamers.

The cold storage rooms are kept at proper temperature by two Frick compressors, one of forty tons and the other of twenty, only one being operated at a time so that the plant always has a safe margin of cold storage apparatus in reserve for use in case of a break down. These compressors are operated by electric motors of the Allis Chalmers pattern, which take current from the Shanghai Municipal plant, a transformer station being located on the premises of the company. The steam plant consists of an Erie boiler and with only half of the plant working, forty pounds of steam on the guage is found sufficient. A second boiler is kept in reserve, the designer of the plant having provided against stoppages from a break down of any part of the machinery. The ammonia compressors are arranged with an electric device that insures immediate stoppage of the motors in case of the breaking of a pipe or any other accident.

Beside the frozen eggs and dried yolks, the company soon will begin the manufactures of dried white of egg operating under a newly patented device which gives a product as thoroughly sterile as does the present drying method for the yolk. This device is now being installed and upon its completion, the activities of the plant will be considerably augmented. The demand for whites, contrary to the current opinion, is greater than for yolk, and the large drying plant in the United States never have been able to supply the demand for dried white of egg or egg albumen as it is called in trade.

In the United States, the experience has been that each case of eggs contains five pounds of shells, eighteen pounds of yolks and seventeen pounds of whites. The Chinese egg being from a smaller and different variety of chicken, runs about sixty per cent of white. In drying the egg, it has been found that two pounds of yolk make one pound of the flake while it takes seven pounds of whites to make one pound of dry product, so that the whites are much more expensive than the yolk.

The demand for frozen eggs in the United States is extremely large and growing rapidly so that Messrs. Keith and Company, who have the selling agency for the Shanghai plant as well as for other important ones in the United States, had an output of six million pounds of frozen eggs last year.

The Amos Bird Company also supplies sugared egg yolk and sugared frozen eggs, having a patent on the process and product which has been found to be a great advantage over the use of simple frozen eggs. This variety of product is also being made at the Shanghai plant.

The Shanghai plant was erected by Mr. L. Nordmeyer, refrigeration engineer, and it embodies the latest improvements as developed by the Seymour Packing Company of Topeka, Kansas, which is considered the model plant of the United States and in addition operates under the various egg product patents owned by the H. J. Keith Company, Boston, which firm was the pioneer in the drying and freezing of eggs. The plant is regularly inspected by the United States health officer located in Shanghai, both as to its general sanitary features and as to the health and cleanliness of the workers.

DEVELOPING AMERICAN COMMERCIAL INTERESTS IN CHINA

Railway and Canal Contracts Signed

American commercial activity has been of little importance in China since the early Co-hong days of Canton when some of the best sailing vessels were laden with American products bound for the China coast, with full return cargoes of silk and tea from the Orient for American and European markets. There was a time when the coast steamers plying between Japan and China numbered among them many under the American flag, but for the past twenty-five to thirty years America has been little known in China as a trading nation, practically all of her ships, those traversing the Pacific, the coast lines as well as river steamers, having entirely disappeared. The Standard Oil Company alone has kept the American flag flying in China, the vast organization which this company has developed carrying it into nearly every part of the interior. With the exception of the Standard Oil Company there has been little or no American trade of a permanent nature. For a while American cotton goods found a market in Manchuria but only to be driven out by Japanese rate-discrimination, this large field for one of America's greatest products thus also being lost.

In the many Treaty Ports opened to foreign trade in China we find every Power represented in the form of large concessions, each placed under the flag of a foreign nation, but in no instance do we find the American flag thus flying. This, of course, is a matter of gratification to many Americans, it being typical of the real American spirit manifested towards China, proving to China and the world that territorial aggression is not a policy followed by the United States in her endeavor to secure her share of foreign trade. One thing that Americans rightly pride themselves upon is the magnanimous manner in which she has undertaken the modernizing of Young China through her educational institutions scattered throughout the Provinces. Ninety percent of the young men educated abroad, other than those educated in Japan, have studied in the colleges and universities of the United States. In the various philanthropic institutions, such as hospitals and orphan asylums, the United States has also, through her missionaries, taken the lead, and to-day there are to be found few of the largest cities of China that do not have American doctors in charge of hospitals largely supported by American money.

The birth of the Chinese Republic is largely the direct result of American education. The recent awakening of the Chinese to a realization of their position has been attributable solely to the work of the American missionary, and to-day China cannot place her hand upon a single instance in which either the Government of the United States or her people have taken advantage of her weakness, while there are hundreds of occasions upon which her cause has been championed by the American public in a struggle to secure for China fair play from other nations.

The history of Great Britain in China has been second only to the United States in consideration of the men and money directly spent upon China in the development of education. In commerce Great Britain has kept the lead until very recently, the European war temporarily suspending her Far Eastern trade. The United States has, because of the vast territory undeveloped within her own borders, given but slight attention to the expansion of trade in China. It is also true that until very recently America has been a borrowing nation, and within the last few years only has she been able to find a surplus of capital for foreign investment.

The object of America to-day is to invest capital upon purely commercial principles in those countries that will afford the investment adequate protection. Of recent years the South American fields have been exploited to some extent by New York financiers and that the United States is now seriously considering China as a great field for commercial and industrial development through the aid of American money, is self evident. With the formation of the American International Corporation and its allied companies for foreign trade we find this organization undertaking work upon a large scale in China. This organization is thoroughly commercial, and is in no way political. For this reason, if for no other, we feel certain that the Chinese people will welcome American capital in the development of her vast resources; and other nations interested in China will undoubtedly feel towards American capital as China does, for in the greater development of China upon modern lines will come greater opportunities for foreign trade of all nations.

The American International Corporation on April 19, 1916, signed an agreement with the Government of China for the dredging of the Grand Canal, including the reclamation of large tracts of land which will produce the very best results in the way of farming. This work was initiated by the Red Cross Society of the United States and was taken up by the American International Corporation not only from the standpoint of a purely business transaction, but also as a scheme which is humanitarian and will prove of the greatest benefit to a population of more than ten million people that live upon either side of this great water way between the Yellow River and the Yangtse. The American people have contributed during the last decade something over five million dollars gold to relief work in the famine districts along this waterway, and it is significant to note that the present estimate for the conservation of this Canal is approximately the amount already spent by the Americans in relieving the distress which has been the result of negligence upon the part of the Chinese Government in taking care of the Grand Canal.

On May 17, 1916, the firm of Siems & Carey signed a contract with the Chinese Government for the building of railways in China, and on September 29 the detailed agreement in regard to the working out of the original agreement was decided upon. Siems & Carey will have entire charge of the construction of the railways to be built under this contract and the American International Corporation has undertaken the flotation of the bonds for the Chinese Government in this work. In the Grand Canal scheme Siems & Carey will also have charge of the work. The railways contemplated by the agreement are as follow, though it is provided that if they are not feasible equal mileage shall be allotted elsehere in China.

1.—From Fengcheng in Shansi Province to Ningsia in Kansu Province.

2.—From Ningsia in Kansu Province to Lanchowfu in Kansu Province.

3.—From Hangchow in Chekiang Province to Wenchow in Chekiang Province.

4.—From Hengchowfu in Hunan Province to Nanning in Kwangsi Province.

5.—From Lu Hwei in Kwangtung Province to Chungchow in Kwangtung Province.

These lines are to be built upon a percentage basis as initiated by Pauling and Company in their Shasi-Shingyifu railway agreement.

The Chief Engineer appointed for the proposed lines is Mr. George C. Kyle, who is recognized as one of the first engineers in the United States, having also had foreign experience. There will be several other prominent American engineers associated with Mr. Kyle in his work. The construction will be undertaken by the very best men to be found among construction engineers in America. Mr. E. J. Purcell, who is considered in both Canada

and the United States as among the very first of construction Superintendents, is already in China. The Siems-Carey Railway and Canal Company will make every effort to employ the very best of Chinese engineers, and a special effort will be made to use as many Chinese as can be found competent for such work.

Mr. William F. Carey, one of the partners in the firm of Siems and Carey of St. Paul, Minnesota, is the President of the Siems-Carey Railway and Canal Company, and is known as one of the three leading railway contractors in the United States. He is a man of slightly under forty, who has had the very highest training to be had in his line of work and just recently had a great portion of the Grand Trunk Pacific of Canada to construct.

The Vice-President and General-Manager of the Siems-Carey Railway and Canal Company is Mr. F. C. Hitchcock, who recently resigned his position as Vice-President and General-Manager of the great New York firm of contractors, MacArthur Bros. Company, to take up his position in China with the new firm.

In Messrs. Carey and Hitchcock, China can boast of having two of the greatest contractors in the world to-day in charge of the construction of railways to be built under the contract recently concluded between the Chinese Government and Siems and Carey.

One of the Vice-Presidents of the Siems-Carey Railway and Canal Company is Mr. Willard D. Straight, who is well known in China and is now considered one of the leading young financiers in the United States. Mr. Straight's continued interest in China has had a great deal to do with the splendid start made by the American International Corporation here.

In building these railways the Chinese and Americans feel that they have the good-will of all other nations in that new railways will be the means of affording greater facilities for the marketing of European products as well as the building up of a greater export trade. It is significant to note that the entire export and import trade of China for the year 1915 did not exceed the total of manufactured products exported by the city of Milwaukee in the year 1914. The building up of trade in China is largely dependent upon the development of communication, and China can well afford to have a railway system of no less than two hundred thousand miles. In the United States to-day there is approximately three hundred thousand miles of railway, with a population of one hundred million.

In the development of Chinese mines there will also be found a greater necessity for rail communication, and there is hardly any form of trade and industry that will not profit by the building of railroads.

The railway project will embrace something over 2500 miles of railway in China at a cost of approximately $120,000,000 gold and it is estimated that a period of from five to six years will be consumed in carrying out this construction if work can be continuously carried on.

THE SHUIKOUSHAN LEAD MINE IN HUNAN

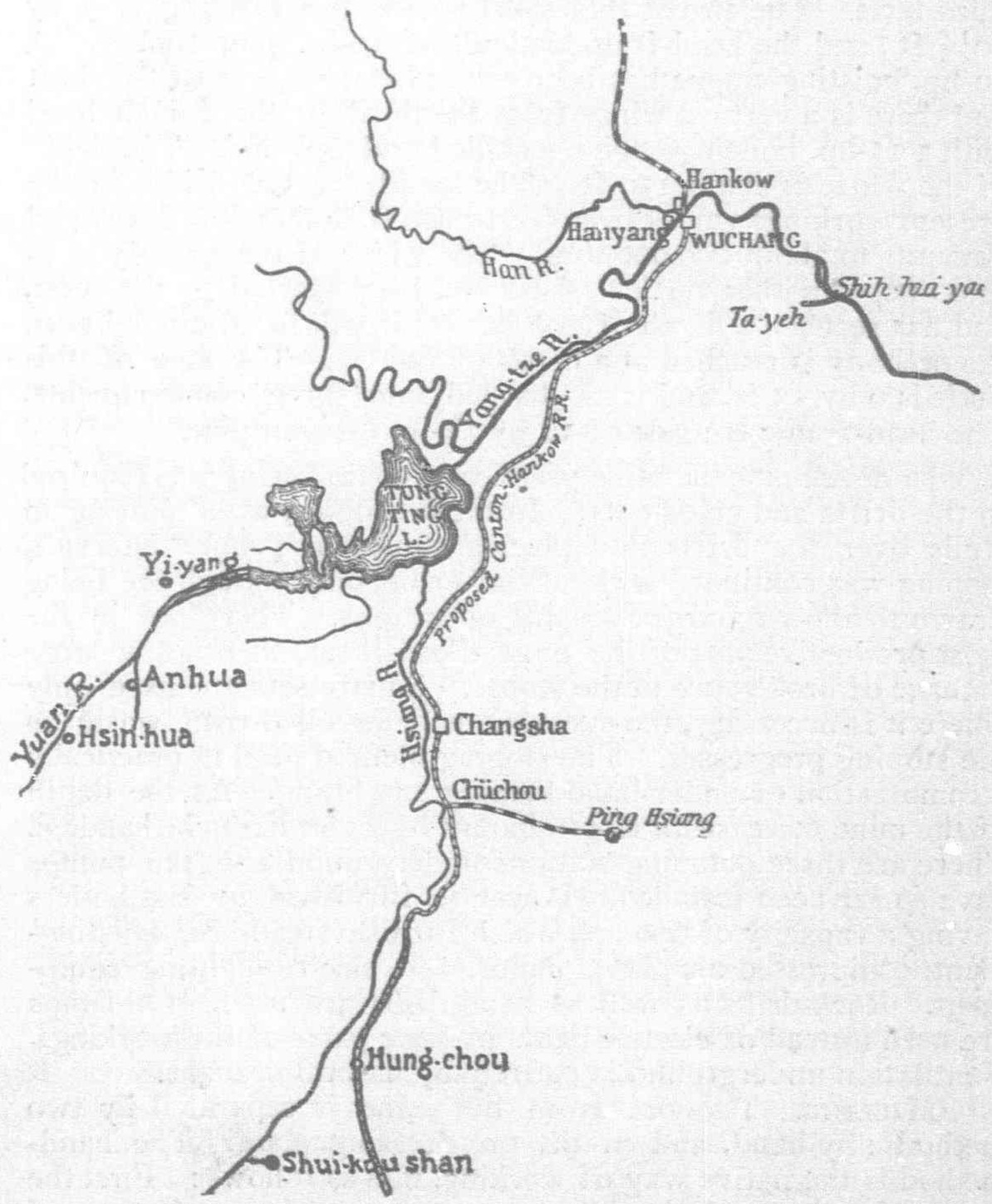
The efforts of certain Japanese financiers to secure the lead mines at Shuikoushan, in the Province of Hunan, as security for a loan to the Chinese Government of some five million dollars has evoked quite an amount of interest among foreigners, and raised not a little stir among Chinese, particularly those of the province concerned. The result of agitation against pledging the mine as security is that the Peking Government has found other security for the loan.

While many Chinese recognise that there must be foreign participation in mining in China before proper development can be expected they do not wish to see the participation come about as a result of an agreement for a loan for purely administrative purposes. Bona fide investment in mining enterprises in accordance with the laws governing mining in China is welcomed, and if the laws are not acceptable to foreign investors sensible Chinese agree that they should be amended until they are. Strong opposition of a successful nature consequently arose to the government proposal to pledge the Shuikoushan mine as a loan security; and until that opposition manifested itself few people had ever heard of the mine. An article contributed by Mr. H. Y. Liang to the "Mining and Scientific Press" gives the following facts which may prove of interest:

The Shuikoushan mining district is in the Changlin prefecture of the province of Hunan, about 46 miles south from Hungchoufu, on the south or left bank of the Hsiang river, at an altitude of 1,600 ft. above sea-level. The Hsiang river is navigable throughout the year, either by steamers of shallow draft, or by native junks, to lake Tungting, which has an outlet to the Yangtse river. There is a narrow-gauge railroad connecting the mine with the river-bank. When the Canton-Hankow railway is completed this mine will have direct railway connection with both those cities.

The Shuikoushan mine has been worked continuously for the past 200 years by the primitive methods practised by the natives of the district. On account of the crude methods and equipment employed, the mines were never worked to any great depth, and until recently there has been no extensive development.

In 1896 the governor of the province, Cheng Pao-chung, heard of the richness of this deposit and appointed Mr. Liau as the first director of the mine. At the same time Government funds were set aside for developing the mine. Mr. Liau being only a scholar, was not able to make a success at mining because of his lack of mining knowledge and experience. It was found necessary to employ local miners who had some practical experience. They sank another shaft at a place called Hsichiu-chang, and fortunately succeeded in striking the orebody at a depth of about 300 ft. As the shaft increased in depth, considerable difficulty was found in hoisting ore to the surface. In 1905 T. P. Sha was appointed mining engineer, and sank an



MAP SHOWING LOCATION OF SHUIKOUSHAN

inclined shaft on the south side of Hsichiuchang. He also built a hoisting-plant and a pumping-station. The maximum capacity of this hoisting-plant is 200 tons per day. A sorting-house, an ore-dressing plant, and a narrow-gauge railway were soon built. At present a second vertical shaft and a new ore-dressing plant are under construction. The new plant will be completed within two years, and the total output of the mine will then be doubled.

The mine is at 26°40′ north latitude and 112°40′ east longitude. The climate is mild, the maximum temperature in summer being 104°F. and the minimum during winter 40°F. Under these conditions work can be carried on almost throughout the year.

GEOLOGY. The rocks of the Shuikoushan district are granite and limestone, the ore occurring near the contact. The granite is much altered by weathering. The rocks have been so metamorphosed by the mineralizing agencies which produced the ore deposits that but few of their original characteristics are distinguishable.

The granite is traversed by joints and shear-planes, which are easily seen in fresh exposures, and which form characteristic fissure-systems. The orebody is deposited as a linked vein parallel with the joints. The ore has been extracted for a length of about 1,000 ft. along the strike from the southeast to northwest dipping to the northeast 80°. The characteristic fossils found are trilobites, corals, starfish, graptolites, etc. The geological horizons are Silurian and Devonian.

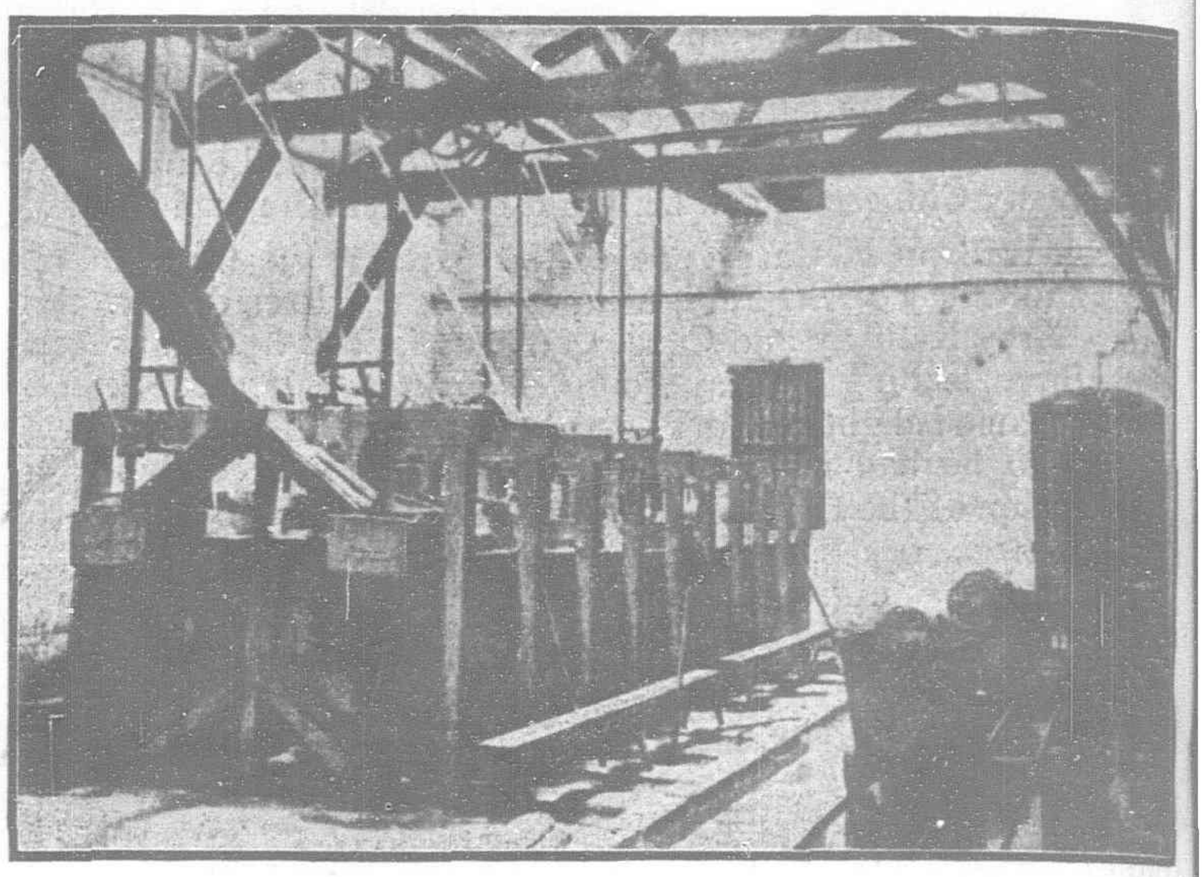
The ore is a mixture of galena, zinc-blende, and pyrite, and the gangue minerals are calcite, granite, with some dolomite. As it comes from the shaft the ore has the following average analysis:

Shaft.	Lead, %	Zinc, %	Silver, oz.
No. 1	33.00	29.40	21.2
No. 2	19.10	29.40	18.0
No. 3	23.40	23.70	18.0

DEVELOPMENT. There are now two shafts in operation: one, called Hsichiuchang, is only worked by native methods and is about 600 ft. deep: the other is an inclined shaft with a slope-length of about 800 ft., at an angle of 51°. It just reaches the third level. The size of this shaft inside the framing is 9 by 10½ ft., and the head-frame is built of 10-in. pine timber. A 50-hp. hoisting-engine has been erected at the mouth of the shaft and there is a vertical winze from the third to the fourth level with a 15-hp. hoisting-engine installed underground. The depth of the winze is about 150 ft. The length of the drifts in the present workings varies from 600 to 900 ft. and the ore developed amounts to about 200,000 tons. The width of the orebody is 45 to 60 ft. Another vertical shaft has been started to the west, and has reached a depth of 100 ft. This will be continued until the orebody is reached at a depth of 600 ft. The size of this shaft is 9 by 15 ft. and it is divided into three compartments. The head-frame is made of 10 by 12-in. Oregon pine.

In developing the mine practically no timbering was required in the drifts and cross-cuts. In the orebodies, after putting in stulls over the drifts and placing chutes at proper intervals, stoping was continued without timbering, only enough ore being drawn to allow room for stoping operations. Therefore in the most productive part of the mine there is at all times a large tonnage of broken ore in the stopes. Square sets are used only where it is necessary, the excavations being filled with waste as the stoping progresses. The stoping method used is practically a combination of under-hand stoping and filling. As the depth of the mine increases, a large amount of water has to be handled. There are three pumping-stations underground and ten pumps have so far been installed. Power is furnished by six boilers having a capacity of 600 hp., which furnish steam for hoisting-plant, compressed-air plant, pumps, and electric-lighting equipment. Rock-drills as well as hand-drills are used. Oil lamps are used instead of electric lights in some parts of the workings. Ventilation underground is entirely by natural draught.

MILLING. The ore from the mine is separated by two methods: by hand, and in the ore-dressing plant. The hand-method is the native way of working, it is as follows: First the lumps of galena and zinc-blende are separated by workmen and



JIGS IN CONCENTRATION PLANT

broken by hammers. Then the smaller particles of galena, zinc-blende, and pyrite are separated by panning. This is done in round wooden barrels with bamboo sieves. The barrel is filled with water and the sieve, placed therein, is filled with ore, which is worked by two hands with a circular motion. The particles of galena and zinc-blende are thus separated quite thoroughly and the result attained by this process is nearly the same as with the ore-dressing plant. However, the hand-process is very slow, so an ore-dressing plant had to be built in order to take care of the increasing output of the mine. The treatment is as follows. The ore from the mine is screened in a trommel with 2½-in. holes, the over-size is crushed and the combined under-size and crushed over-size then passes over a picking belt, on which coarse clean ore and waste are picked out. The ore then passes to trommels which grade it into sizes that go to their corresponding jigs. The jig tailing goes to waste, but the middling is re-crushed by rolls screened, and sent to the fine jigs. The tailing of these goes to waste, the middling is sent over Wilfley tables, which make concentrate and a tailing which goes to waste. No attempt has yet been made to recover lead and zinc lost in the coarse tailing.

As has been stated already, the final products obtained by hand-concentration and the ore-dressing plant are much alike. Their average analysis is shown in the table below.

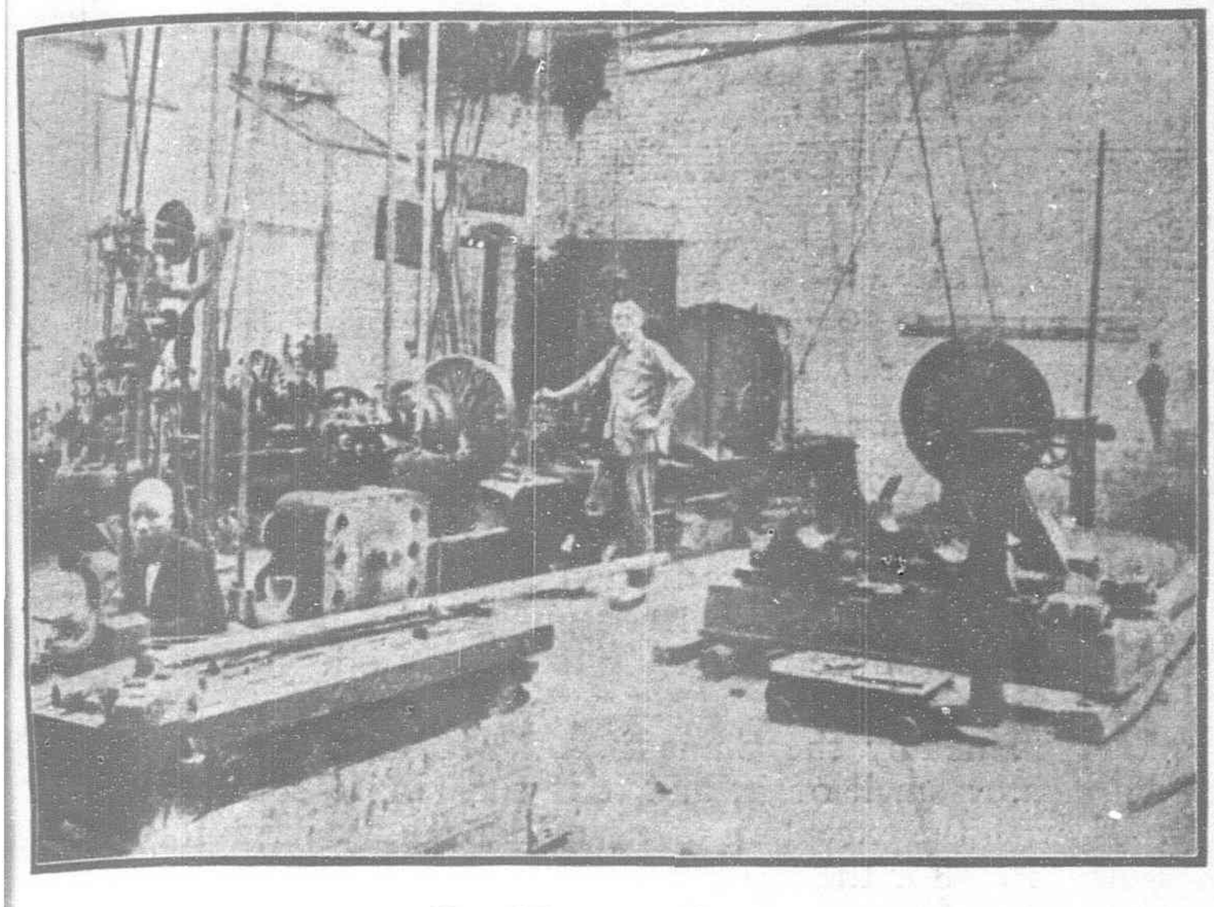
	Lead, %	Zinc, %	Silver, oz.
Coarse lead ore: (1)	73.3	4.7	29.8
(2)	58.3	11.4	22.5
Coarse zinc ore	2.3	53.4	3.8
Fine lead ore	74.8	6.6	24.4
Fine zinc ore	4.7	36.2	3.8

These five products are made by the native method.

	Lead, %	Zinc, %	Silver, oz.
Fine lead ore	73.3	7.7	29.5
Fine zinc ore	10.4	30.5	5.1

ORGANIZATION. The officers of the mine are organized into two distinct departments and each department has its own building. One department goes by the name of the Head Office and the other is called the General Mining Office. The Head Office is divided into three departments: transportation, supplies, and miscellaneous. The General Mining Office is divided into five departments, including prospecting, mining, ore-dressing, assaying, surveying, and machinery. Each department has its own staff of officials with its own head in charge.

PRODUCTION. It is not worth while to attempt to estimate the output in the early days of the mine, but since 1905, when the hoisting-engine was erected, records have been kept and the output is given in the table below. As the rock-drills are just now coming into use a great increase in the output may be expected in the next few years.



THE MACHINE SHOP

	Galena. Tons.	Zinc-blende. Tons.	Sulphur. Tons.
1896	503	678	105
1897	807	1,832	155
1898	1,882	1,888	200
1899	3,036	4,571	104
1900	2,791	5,822	205
1901	2,260	4,806	216
1902	3,627	5,721	252
1903	3,690	5,307	85
1904	2,342	5,558	58
1905	2,079	5,187	59
1906	1,792	6,662	47
1907	1,973	10,011	34
1908	2,910	8,134	39
1909	3,088	8,483	83
1910	3,553	7,787	44
1911	4,035	9,798	97
1912	2,987	9,444	339
1913	3,164	10,319	182
1914	7,625	22,875	None
Total	53,164	134,875	2,304

LABOR. The total number of workmen is about 5,000, most of whom are from the surrounding district. The scale of pay varies greatly, the highest being for underground work. The following table gives the rates of pay:

	Rate per day.		Rate per day.
Drillers	Po.24	Bricklayers, No. 3 grade.	Po.16
Pump attendants	0.14	Painters	0.16
Common laborers	0.14	Machinists, No. 1 grade..	1.50
Carpenters, No. 1 grade...	0.24	„ „ 2 „	1.20
„ „ 2 „	0.20	„ „ 3 „	0.90
„ „ 3 „	0 16	„ „ 4 „	0.60
Bamboo workers	0.16	„ „ 5 „	0.30
Laborers	0.12	Ore-dressers, No. 1 grade	0.18
Bricklayers, No. 1 grade.	0.20	„ „ „ 2 „	0.16
„ „ 2 „	0.18	„ „ „ 3 „	0.14

The underground laborers work 8 hours per day, surface laborers work 10 hours per day.

TRANSPORTATION. From the mine the ore was transported formerly to Sungpe (the bank of the Hsiang river) a distance of about 4⅔ miles by coolies at a cost of P1 per ton. In 1912 a single-track narrow-gauge railway was built, reducing the distance to 10 li or 3⅓ miles. The train makes 10 trips per day and has entirely displaced the coolies with all the attendant trouble. The distance by water from Sungpe to Changsha is about 200 miles, and the ore is transported in native junks carrying cargoes of 20 to 120 tons each at a cost of about P1 per ton. In the spring and summer, when the river is high, transportation is very easy, the time being about four days; but in the autumn and winter, when the water is low there is great difficulty on account of the shallowness of the river. When the new developments are completed and the output increased, the mining company intends to build a number of shallow draught launches and transport as much ore as possible in the spring and summer.

GENERAL DATA. There formerly was in operation at Changsha a modern lead-smelting works, but for some reason or other it has ceased to work and the lead and zinc ore is at present sold abroad.

The police force was organized in 1912 and 70 policemen are now employed; formerly the protection of the mine was in the hands of soldiers. The police have also to undertake the work of sanitary inspection in order to safeguard the health of the people. The force is divided into groups of seven men each, under a petty officer, and the whole force is under the control of the Chief Officer of Police. They are drilled every other day for two hours and have one day in the lecture room under a trainer.

As machinists are the most important workmen, a mechanical training school was opened in 1912. There are 40 students, who are trained under a practical mechanical engineer. A series of lectures in English, Mathematics, Mechanical Drawing, and Chinese Literature is given, the course lasting three years.

Close to the Shuikoushan mine, at about a distance of one mile, is the Tsiagungchung coal mine, which was opened in 1913. The seam of bituminous coal is about one foot thick, the output per day varies between 20 and 40 tons. The coal seam is bedded in red sandstone. Prospecting work is being done through an inclined shaft at an angle of 35°, sunk at right angles to the seam in order to intersect other seams. If this coal mine is developed it will be able to cover the demand of the Shuikoushan mine and will decrease the present expense for fuel.

JAPAN'S NEW STEEL COMPANY

One hundred names now are on the promoters' list of the Oriental Iron Smelting Company, which is to work the Taochun Iron Mine, Anhui, China. The proposed company, according to the prospectus, will have a capital of 25,000,000 yen, and plans to produce 170,000 tons of pig iron and 150,000 tons of steel annually. The company principally depends upon the Taochun Mine, but ores will be imported from Chosen and elsewhere. Coal for the smelting operations will be obtained by mixing Kyuchu, Kaiping and Penchifu coals. The works will be modelled after the Government Iron Works at Yawata.

The work will cost 18,680,000 yen exclusive of the import tax estimated at 2,300,000 yen. The whole amount is to be defrayed in three years, and at the end of the third year the buildings will be completed and the plants fully installed. However it is planned that half the subscribed capital will be paid in and the other half will be raised by the flotation of a loan. During the three years required for the preparations, the company will pay interest at 5 per cent. per annum on the capital paid in, and during the year after the commencement of actual operations shareholders are assured of annual dividends at 7 per cent. though the total volume of production will still be half the maximum. The second year of actual business the company will pay 8 per cent per annum as dividend, while in and after the third year dividends at 10 per cent. per annum are expected to be paid as then the maximum amount of production will be attained and the net profit will be raised to 3,458,700 yen.

The shares of the company will be of the denomination of 50 yen each, the whole amount of capital being divided into 500,000 shares. The board, after the formal organization of the company, will consist of ten directors and five auditors.

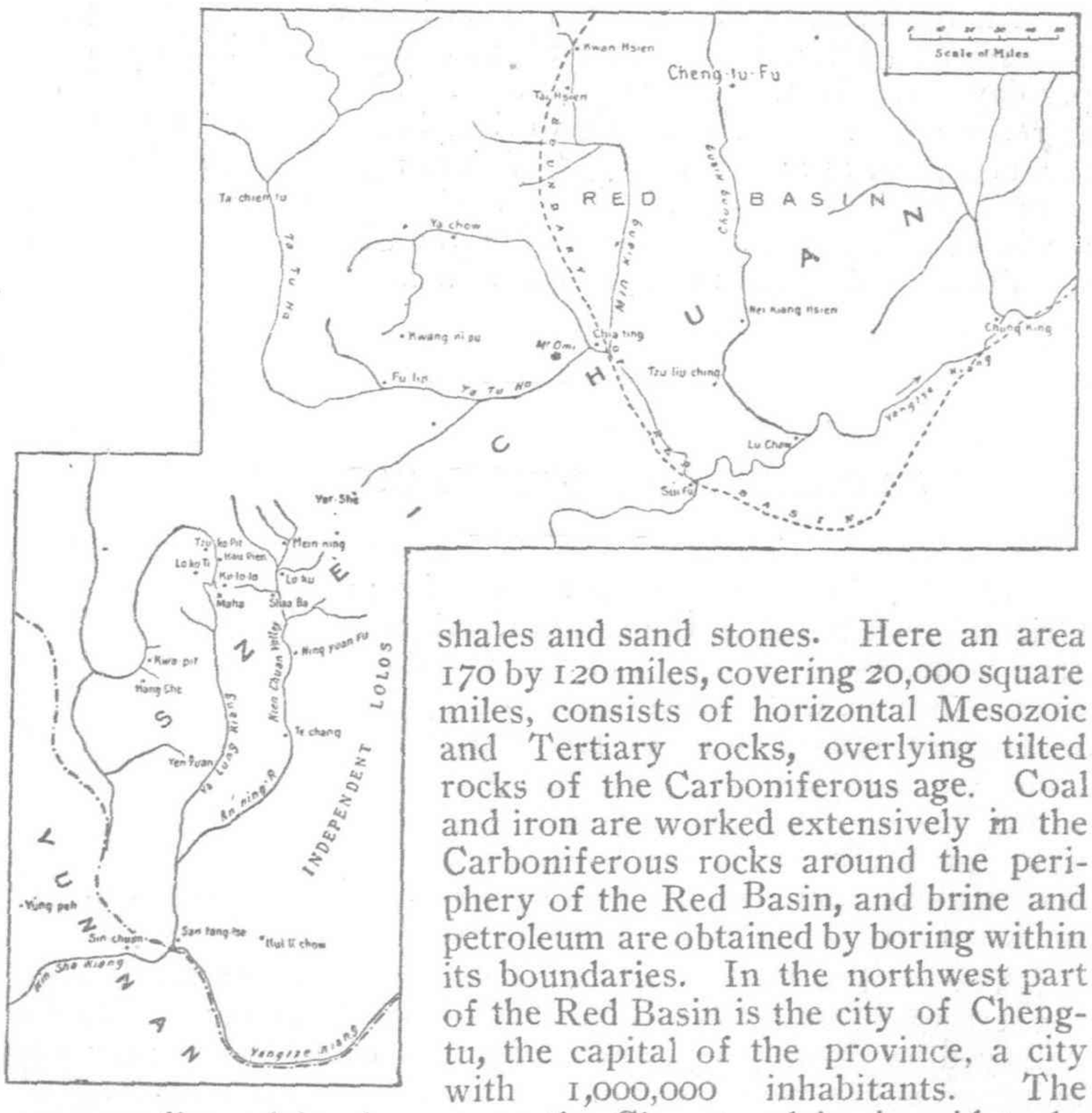
THE MINERALS OF SZE-CHUAN, CHINA

By Herbert W. L. Way

The author of this article has been recently engaged in investigating the mineral resources of Sze-chuan, a province of China that has for centuries been a large producer of metals and salt. Petroleum is plentiful, but has not yet been worked to any extent. Gold, silver, and copper deposits offer promise for development and treatment by modern methods.

Sze-chuan is one of the south-western provinces of China, and it has been famous for centuries for its yield of metals, coal, oil, and salt. Its area is about equal to that of France, and it has a population double that of Shantung in the north, the next most populous province. Its mineral resources have not often been described, and are little known to English engineers. Having recently made a journey through the province, some notes of my observations may be of interest.

Sze-chuan is roughly divided into an eastern and a western part by the Min Kiang river which flows from north to south. On the west the mountain ranges rise one above the other to 10,000 ft., 15,000 ft., and 20,000 ft., and form the eastern flank of the great Tibetan plateau. On the east lies the Sze-chuan 'Red Basin,' so called from the prevailing colour of the Triassic red



shales and sand stones. Here an area 170 by 120 miles, covering 20,000 square miles, consists of horizontal Mesozoic and Tertiary rocks, overlying tilted rocks of the Carboniferous age. Coal and iron are worked extensively in the Carboniferous rocks around the periphery of the Red Basin, and brine and petroleum are obtained by boring within its boundaries. In the northwest part of the Red Basin is the city of Chengtu, the capital of the province, a city with 1,000,000 inhabitants. The surrounding plain, known as the Chengtu plain, is said to be the most fertile in the world and it supports a population of 4,000,000 inhabitants. Here agriculture has reached a high level of perfection, and opium, tobacco, sugar cane, wheat, barley, rice, peas, buckwheat, oats, and all kinds of vegetables are produced in large quantities. Among the fruit trees are the orange, persimmon, apricot, pear, plum, and mulberry. The plain is irrigated by a complex system of water-courses extending between the Min Kiang and Chung Kiang rivers.

The Red Basin.—In the southwest of the Red Basin are the noted brine and petroleum wells of Tzuliuching and Chia Ting, which are distant about 35 miles apart. Between these two centres there are from 8,000 to 10,000 of these wells, and also some natural gas wells, the gas being much used by the Chinese. Of the brine and petroleum wells, the most profitable to the Chinese are those which produce the highest percentage of brine and the lowest percentage of petroleum; in fact, a great many wells are closed-down because the percentage of oil is too great for the profitable production of brine. If a well produces over 50% of oil it is considered unprofitable. Those wells that are working produce from 15% to 50% of oil, 50% to 85% of brine, the average being about 33% of oil and 66% brine. The oil is reckoned by the Chinese as a necessary evil. They hate the touch or smell of it, and it is run out to soak back in the sands, with the exception of a small quantity used for lighting the works. For the latter purpose it is burnt in a crude state in earthenware lamps such as were used by the Romans. At Tzuliuching, the chief centre of the industry, there are about 3000 wells from 1700 to 3000 ft. deep, producing in the aggregate 400 tons of brine and petroleum per day, that is 300 tons of brine and about 100 tons of oil, most of the latter being run to waste. The brine is a saturated solution, and by evaporation yields about 25% or 70 tons of clean white salt per day.

These wells take from one to three generations to sink. The shortest time in which a well has been sunk to brine is 30 years. When the brine weakens, the well is sunk a few feet deeper, and the brine immediately strengthens. The wells are sunk by hand for 100 to 300 ft. according to the nature of the rock, and are filled with baulks of cypress timber, which have 6 in. holes bored through them from end to end. These baulks are gradually built up and wedged in place by rock, and the space in the well unoccupied by the timber is filled with clay puddle to keep out the surface water. Afterwards the bore-hole is sunk with a jumping beam having a long iron drill with a chisel bit at the end attached to a bamboo ribbon rope. A high derrick is erected over each well. The bucket for drawing the brine and oil is a bamboo 20 or 25 ft. in length and 4 to 5 inches in diameter, with a valve at the bottom. This is hoisted by various methods, but usually by winding the rope round a large vertical drum 20 ft. in diameter. The drum is rotated by 6 or 8 buffaloes, or at some wells by mules or oxen. After the bucket is hoisted, the man in charge puts a hook round the lower end, pulls it over a small cistern, and opens the valve with an iron rod. From here the brine and oil run through bamboo pipes to settling tanks where separation is effected by specific gravity. The oil is first run off, and the brine then pumped by wooden chain pumps through bamboo pipes to the elevated tanks at the various evaporating plants. Each of these plants has about two dozen evaporating pans of heavy cast iron about 4 ft. in diameter and 1 ft. deep, into which the brine trickles slowly through the bamboo pipes. The natural gas is led by the same means under each pan and escapes through a hole in the pipe, to which a burner in the shape of a ball of clay with a hole through is attached. Wells which produce an abundance of natural gas are used solely for supplying these plants with fuel. It is said that the chief well has been supplying gas continuously for 280 years.

At Chiating the brine industry is not so prosperous as it was 50 years ago, as the oil has been constantly increasing, and the brine decreasing. In this locality two wells are worked by one hoisting drum placed equidistant between them, the wells being 200 ft. apart, and the drum hoisting the bucket from one well while it lowers the bucket in the other. Otherwise the conditions are the same as at the Tzuliuching.

About 18 miles south of Tzuliuching, there is a seepage where the ground is so saturated with oil that the latter will burn, and there are crevices in the rocks which continually emit gas, which is sometimes set alight by the Chinese.

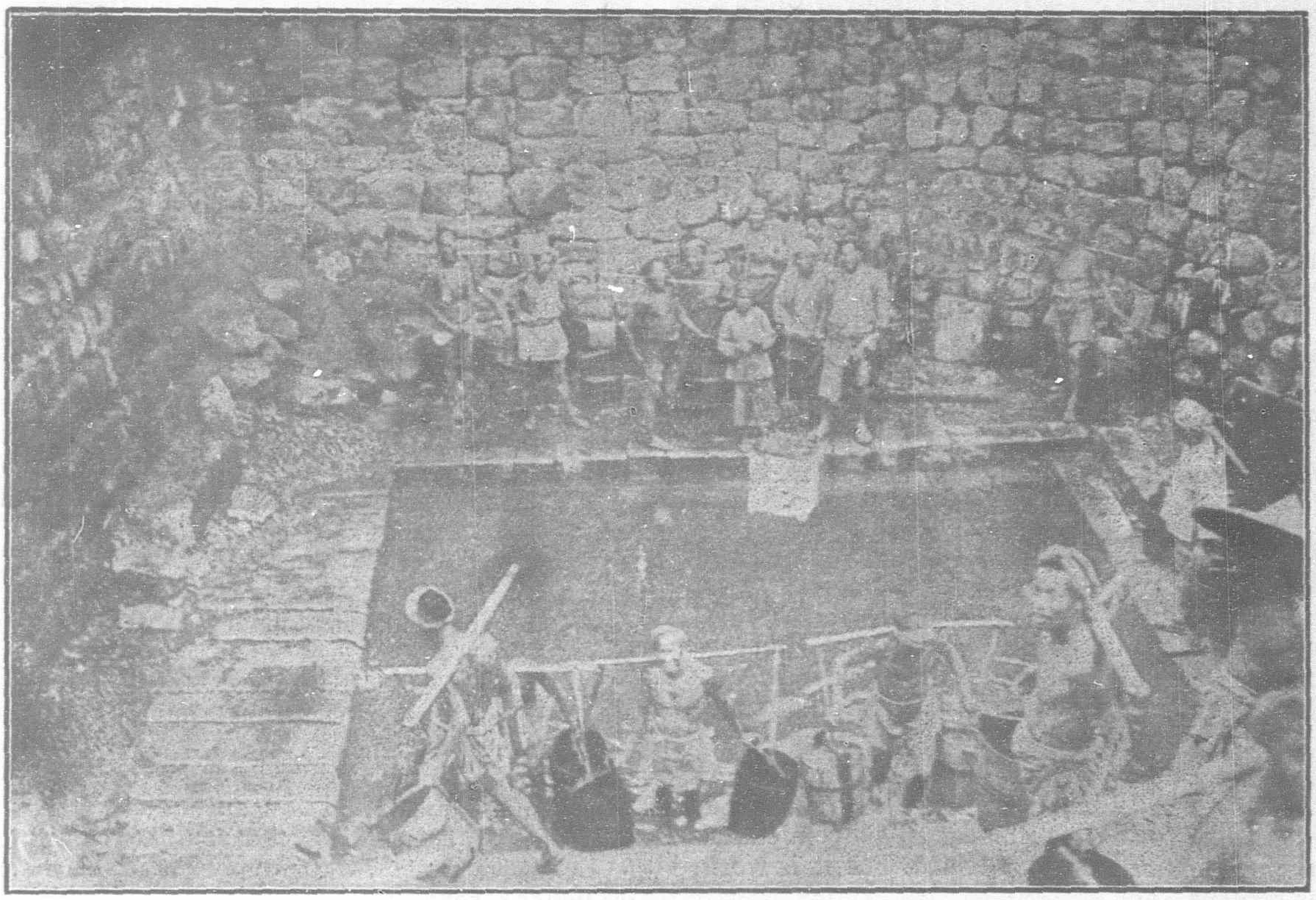
The Lolo Country.—On the western side of the Min Kiang, after passing Ya Chow and entering the mountains to the north

and west of the independent Lolo country, are the two prefectures of Yachow and Ningyuen, which cover an area of about 72,000 square miles. From the Chienchang valley through which flows the Anning river on the east, to the Tibetan frontier on the west, and from Tachienlu on the north to the Kinsha river (or river of golden sand) on the south, there is a stretch of country having an area of 40,000 square miles that is without doubt richer in mineral wealth than any other part of China, and one of the most highly mineralized spots in the whole world. This is a region of a great disturbance geologically, and it is full of lodes and veins carrying gold and metallic ores. The streams and rivers contain many deposits of alluvial gold. Evidences of mining activity are seen on all sides, and mule trains are seen carrying copper metal and matte, lead bullion, iron, and other metals.

The lodes are worked in a primitive way in the oxidized zones by the aboriginal tribes, some under the supervision of Chinese. The sulphides are left behind as too refractory. the miners are paid half its value, as they work on a 50% royalty.

The workings are quite free from water, and as the lode dips with the slope of the mountain, the mine can be worked by adits to a great depth A new cross-cut tunnel has recently been started, which should cut the vein at 260 ft. from its entrance. The workings on the Mala mine extend for 550 ft. along the strike of the vein, and to a depth of 400 ft. on its dip which is 35° from the vertical. The new adit should open up a large body of ore, and is expected to give at least 1400 ft. of backs below the outcrop.

Four miles north of Maha is the Ko Lo Lo copper mine, part of the workings of which have been carried away in a landslide. The workings are extensive, and are of more miner-like character than those at Maha. Near the entrance, and in the main adit, is a deep untimbered shaft 6 ft. square, descending in a series of steps, vertical for 6 ft. then a step 3 ft. wide, evidently constructed in that way for passing up ore by hand, and in



SALT WELLS OF SZECHUAN

The principal gold mine worked by the Lolos under the Imperial Government and Merchants of Szechuan is the Maha. This contains a wide lode varying from 10 ft. to 50 and 100 ft. The richer ore-shoots average 12 or 14 dwt. of gold per ton, and carry considerable silver, copper, and lead and the lode from end to end averages 6 dwt. The ore has only been worked for about 20 years, but alluvial gold has been washed from time immemorial by sometimes as many as 15,000 men at a time, both in the valley in which the mine is situated, and in the sands and gravel bars of the Yalung river, 4000 ft. below the present workings.

There are extensive native workings on a lode that outcrops beyond the Maha mine on the next mountain, but there the oxidation has not gone so far, and most of the ore is too refractory for the primitive methods of the Lolos, who throw the sulphides, chiefly pyrite, galena, and chalcopyrite, on the dump. The ore selected for crushing is carried by hand over the summit of the ridge to the Kololo creek 400 ft. below, where there are 80 stamps worked by 40 overshot water-wheels. Each stamp weighs about 40 lb. and crushes 600 lb. of ore daily in a stone mortar. About 50% of the gold content of the ore is saved by means of quicksilver, which is obtained from a cinnabar mine situated at Hangcho to the south of Kwa Pit. The amalgam is taken to the Mining Bureau at Shaaba, where reality forming an incline shaft at an angle of 27° from the vertical. The mine has not been worked within the memory of man, and no records are in existence at the Mining Bureau. A very large quantity of mineral must have been extracted when the mine was working. The ore visible on the roof of the adit consists of a reticulation of quartz veins containing copper sulphides, carbonates, and sulphates. There are a great number of derelict stone blast-furnaces in the valley below.

The Chinese smelt their copper by the same process as Europeans, but their methods are crude. After stall-roasting the sulphide ores, they smelt in diminutive blast-furnaces, 4 ft. high by 3 ft. wide internal dimensions, built of stone and fire-clay. Each furnace is only good for a 24 hours run, after which it is pulled down and rebuilt for another run a few days after. The blast is supplied by double-acting square wooden bellows, usually worked by hand, though sometimes by water-power. After the ore is reduced, and the slag run off, the molten copper is run into a hemispherical well, and quenched with water.

At Kwang Ni Pu, near Ya Chow, and also at Lo Ku, are iron-smelting works and foundries, treating hematite and limonite ores of high grade, though the extraction is low, averaging 45%. The fuel used, as in copper-smelting, is charcoal, and limestone is used for fluxing. The furnaces are

substantially built of hewn stone and fire-clay; 30 ft. high and 5 ft. wide at the tuyeres, widening out to 10 ft. at the bosh, and tapering to a small opening at the top. The tuyere is of sandstone, having a round hole drilled through for the blast. The blast is supplied by double-acting bellows worked by a water-wheel. The iron is cast in thin plates of fine quality, which are broken up and melted in cupolas with hand bellows, and the molten iron is cast in moulds made of kaolin on a wicker foundation. They cast pans for evaporating brine, and cooking pans for boiling rice. The latter are real works of art, being from 20 to 30 inches in diameter by 9 to 12 inches deep, the thickness of the casting being only $\frac{1}{16}$ of an inch at the rim, and $\frac{1}{4}$ of an inch at the base.

Other Mineral Deposits.—So far, I have based my account of the mineral deposits of the province on my own observations. The Mining Bureau contains many other records some of which I quote in the following paragraphs.

The records show that in the Sichang district there are veins carrying ores of gold and copper. To the north of this at Lokutetze are veins carrying gold and lead ores high in silver, said to produce 20 oz. of silver per picul of ore (a picul being 133 lb.)

At Haupien, on the Yalung river, is an iron mine containing a large body of highgrade ore, which supplies the Loku smelter. West of this, across the Yalung river, at Lokoti are veins of copper ores; this is close to the spot where the Yunnan Company's survey of the railway from Burma crosses the Yalung river.

At Tzukuo Pit, northeast of Lokoti, there is a rich gold-quartz vein, on the outcrop of which a historical nugget weighing 97 lb. was found. This vein has been worked to a considerable extent by the Government Merchant Co-operative Mining Bureau, who abandoned it because the oxidized ores were exhausted, and from lack of capital to supply means for reducing sulphides.

A Matusan in this district is a vein of silver-lead ore, said to produce 8 oz. of silver per picul of ore. Also a vein carrying silver in the form of argentite.

In the Yungchang district, southwest of Tatsienlu, are numerous quartz lodes and alluvial gravel bars. From Mazahan to Lakwan many outcropping quartz veins are known but have never been prospected.

At Tatsienlu there are government silver mines producing 5 to 6 oz. of silver per picul. The vein is 4 ft. wide, and is worked along its strike for over 10 miles. This vein contains complex ore carrying copper silver and lead, but it is worked only for its silver content.

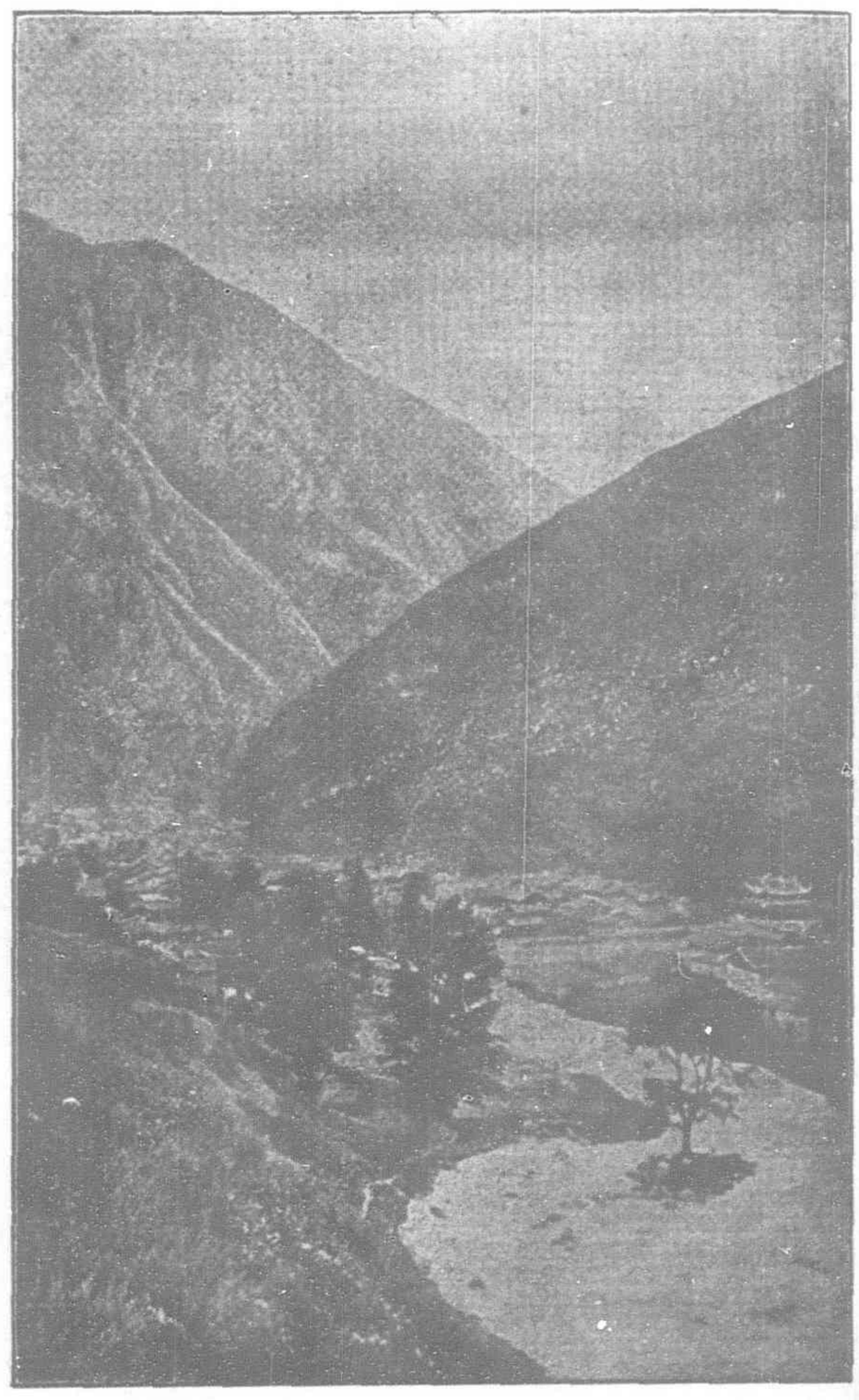
To the north of Tatsienlu is a large auriferous gravel area, situated at the junction of a stream with the Yalung river north of Hokea, said to produce 13 dwt. of gold per cubic yard.

Near Yershe, at Tzutidi on the Tatu river in the neighbourhood of three lakes and hydrothermal springs, there are veins of gold, silver, and copper ores. At Huilungchang in this district there is a vein 6 ft. wide containing copper oxides. At this place 90 smelters worked very prosperously until 10 years ago, when the Lolo Chiefs summoned their men and drove out the Chinese, and have never allowed them to return. But it is not anticipated that any objection would be raised against Englishmen working it.

In the southeast section of the Yershe district veins carrying silver-lead ores are found, and also deposits of bituminous coal of good quality.

In the Yachow district at Lushan there are the best coal seams in the two prefectures, and also a stratum of calcareous conglomerate impregnated with native silver and horn silver. South of the Kinsha river at Fukean, the limit of navigation, on the range facing Liupo, there are numerous veins containing copper and silver ores. These mines supplied the greater part of the silver used in the Tang dynasty. The property is outside the two prefectures, but is included in the copper monopoly.

Near Huilochow are numerous veins of gold, copper, and silver ores, which are worked extensively by the aborigines,



TATSIENLU WHERE GOVERNMENT HAS SILVER MINES

especially the Tatungchang (prosperous silver mine) and Ta Whan Shan (10,000 jewel mine).

At Kwapit there are extensive alluvial deposits rich in gold, and well situated for hydraulic sluicing, especially in the Weilitotze nine miles distant.

In the Yenyuan district are veins containing gold, silver, lead, copper, and zinc, and also quicksilver. There is a quicksilver mine also at Hangcho south of Kwapit. This is worked by native miners, who supply the Maha mine with quicksilver in lieu of royalty. This mine also supplies the Chung King vermilion works with cinnabar.

In the Kwapit district there are extensive alluvial gold deposits, well situated for hydraulic mining, especially at Weihitotse, nine miles from Kwapit.

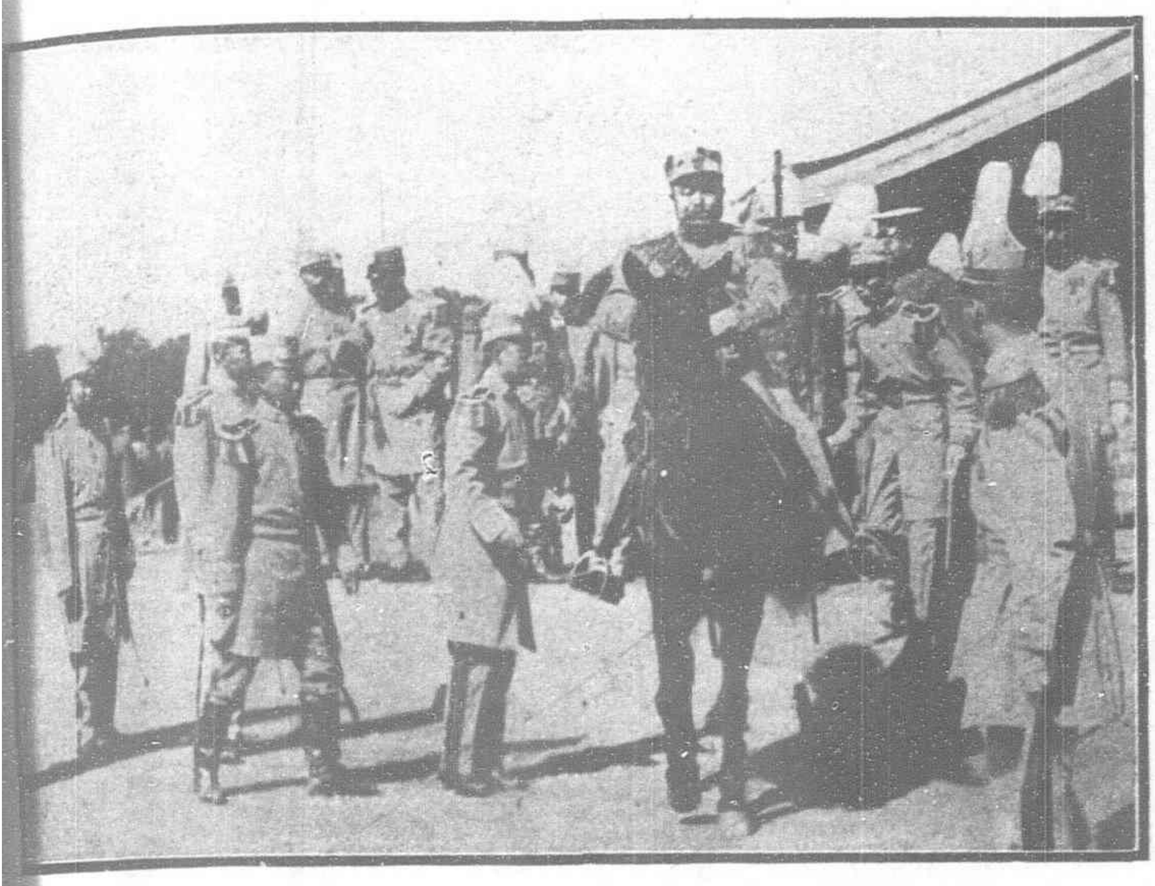
In concluding this sketch of Szechuan, I may say that the higher plateaux and slopes of the mountain ranges are well wooded with trees useful for their timber, besides pine forests in which the Chinese have movable match factories.

MINING IN KOREA

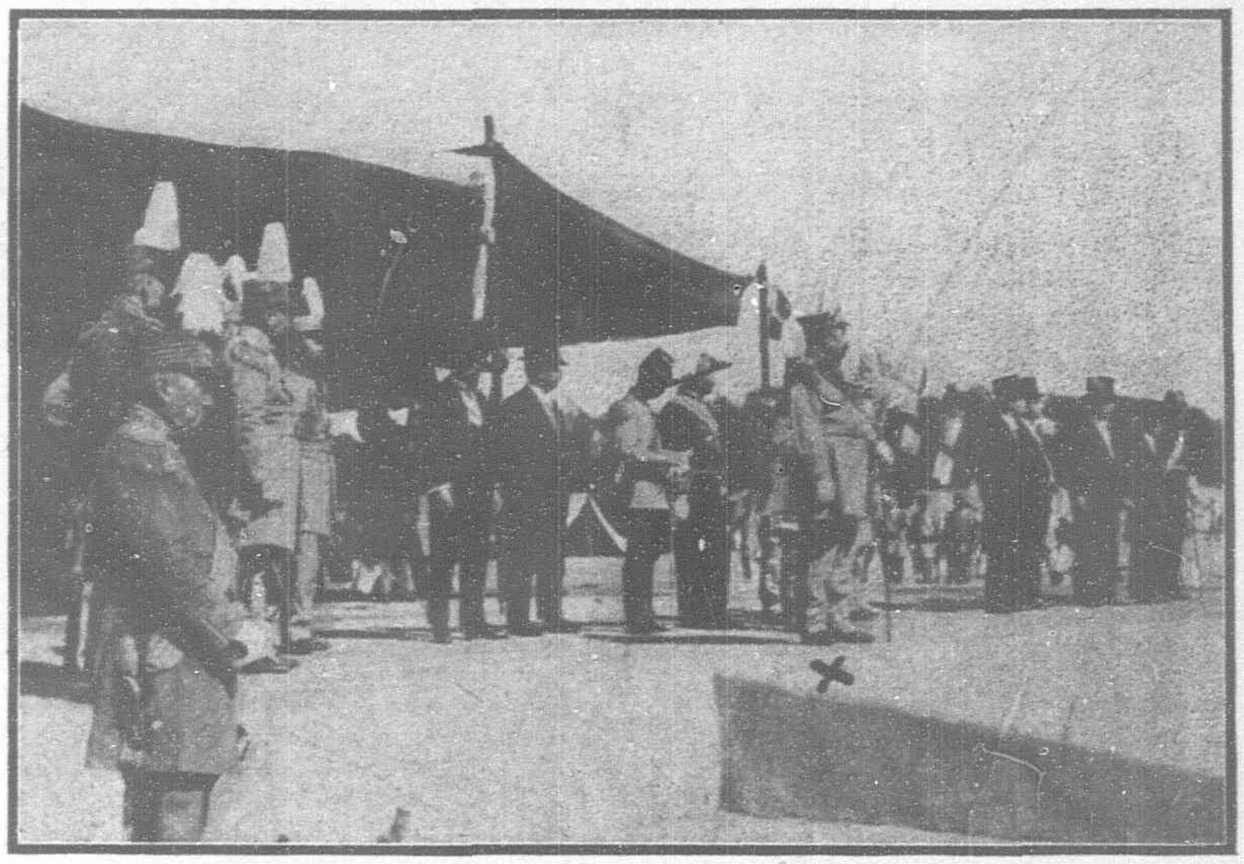
According to an official report quoted by the "Seoul Press," the total output of minerals in Korea during last year was Y.10,515,966 in value, showing an increase of Y.1,900,000 as against the preceding year. Foreign mining people obtained the lion's share of the proceeds, their earnings being Y.7,311,200, Japanese obtained Y.2,820,600, while minerals collected by Koreans amounted only to Y.2,820,000 in value, or one-twentieth of the output by foreigners. Particulars according to different kinds of minerals taken are as follows:—

Gold bullion, Y.6,767,253; Gold ore, Y.192,108; Alluvial gold, Y.699,390; Tailings, Y.970,298; Silver, Y.22,594; Copper, Y.9,506; Iron ore, Y.357,409; Zinc ore, Y.269,438; Graphite, Y.215,077; Coal, 997,746; Other minerals, Y.15,147; a total of Y.10,515,966.

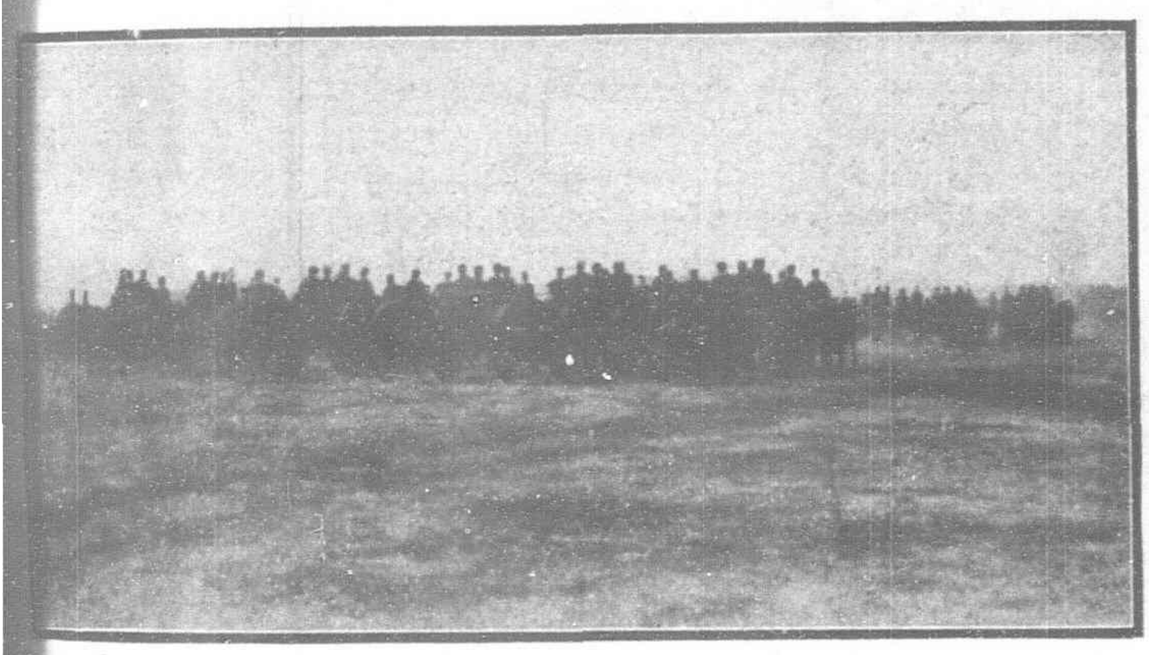
REVIEW OF CHINA'S MILITARY FORCE



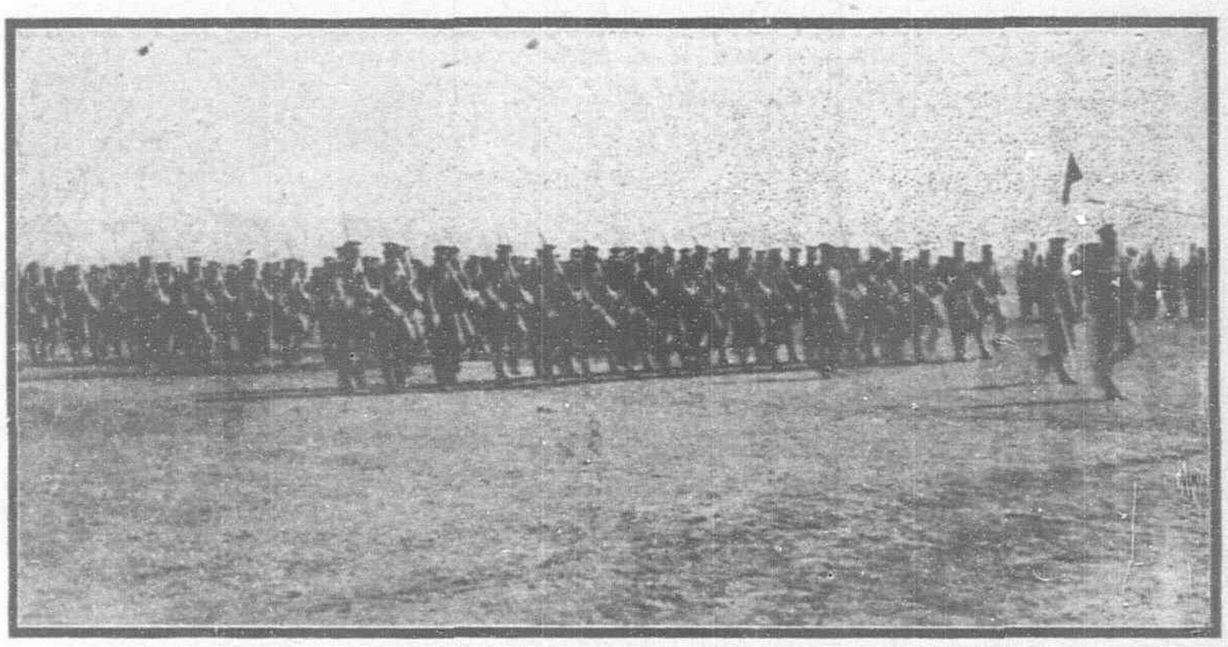
PRESIDENT LI YUAN-HUNG ABOUT TO INSPECT THE TROOPS



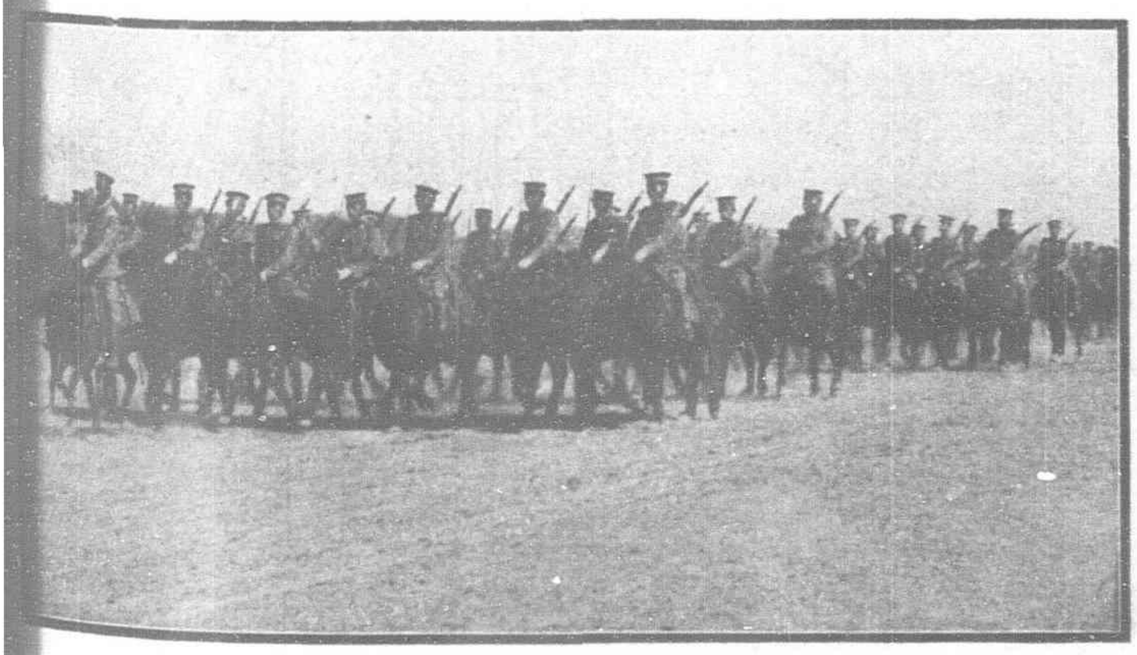
PRESIDENT LI YUAN-HUNG VIEWING THE MARCH PAST



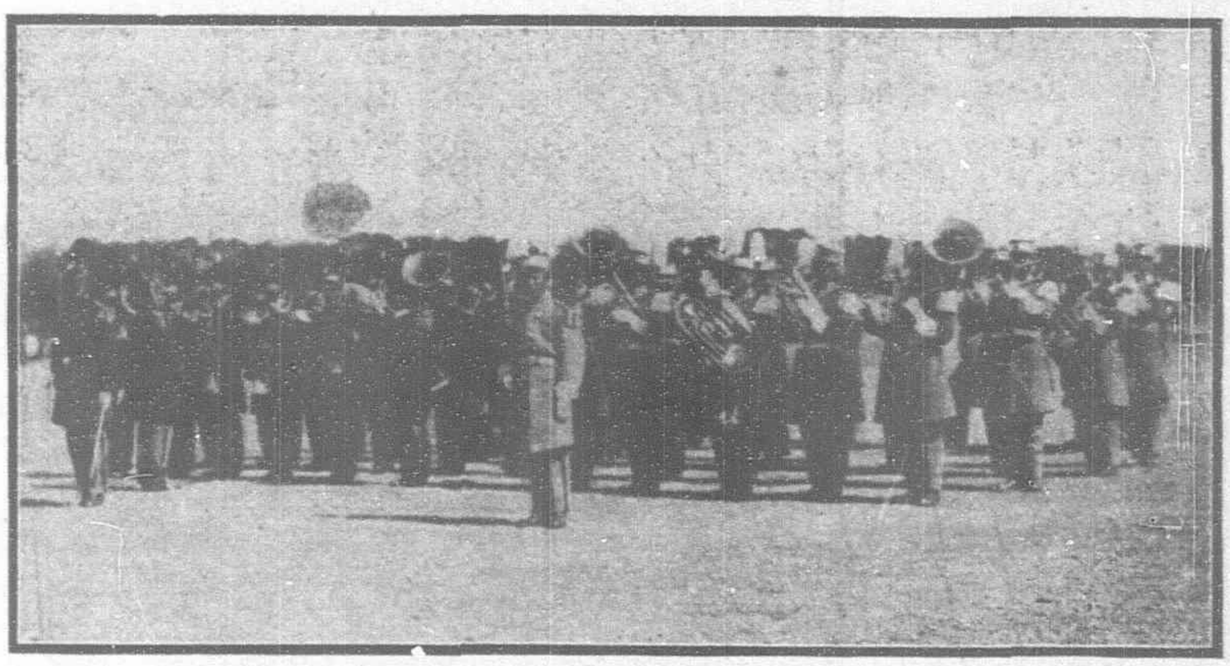
PORTION OF THE ARTILLERY



INFANTRY MARCHING PAST

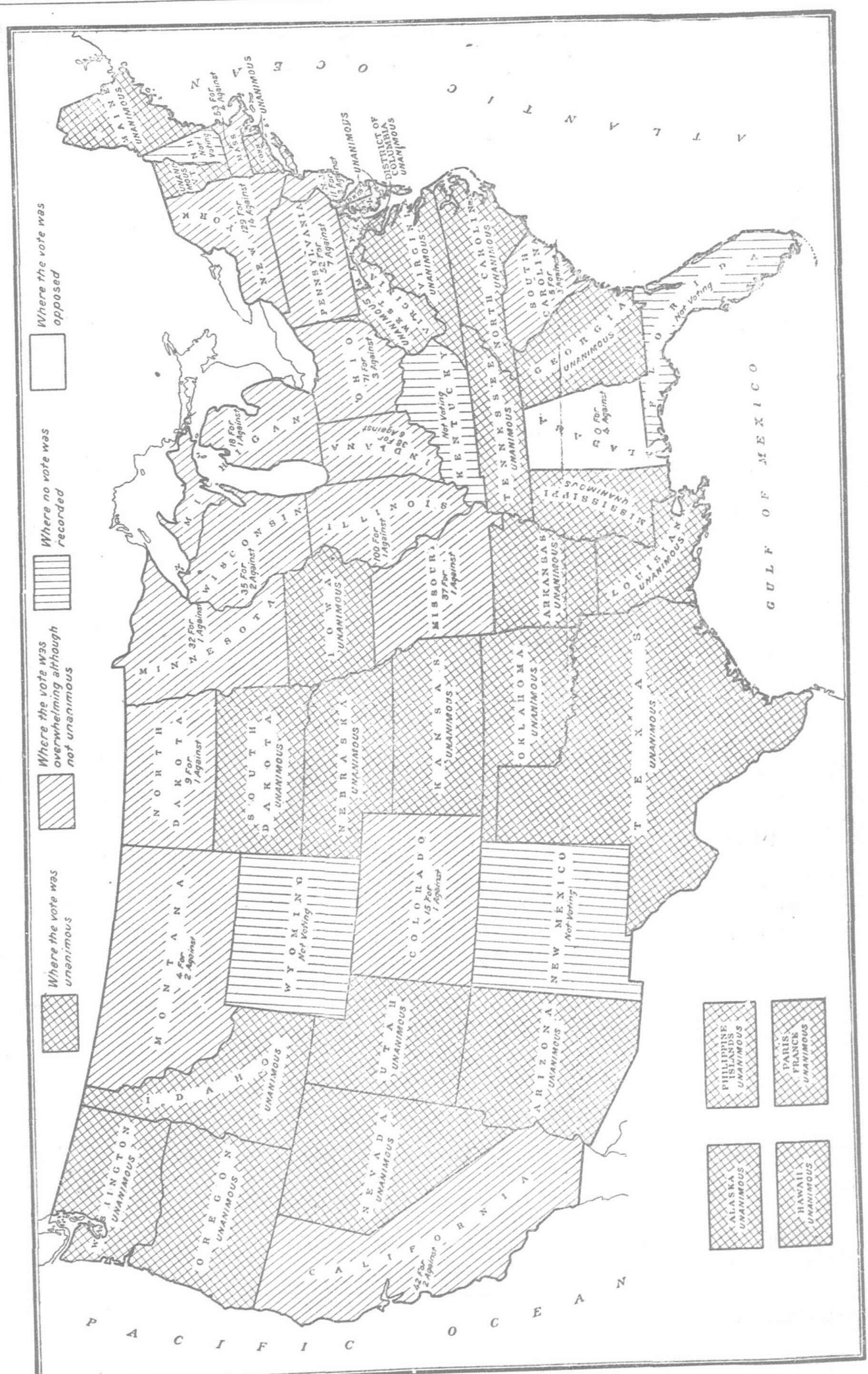


MOUNTED INFANTRY MARCHING PAST



MILITARY BAND

On October 10, the anniversary of the Revolution which overthrew the Manchus and brought about the establishment of the Republic, President Li Yuan-hung reviewed the troops stationed at Peking. The turn-out was excellent and the marching and bearing of all branches of the service evoked warm appreciation from foreign spectators. Three aeroplanes ascended and two flew to Peking after the march past of the troops.


Where the vote was unanimous
Where the vote was overwhelming although not unanimous
Where no vote was recorded
Where the vote was opposed
ATLANTIC OCEAN
PACIFIC OCEAN
GULF OF MEXICO
MAINE UNANIMOUS
N. H. Not Voting
VERMONT UNANIMOUS
MASS. 53 For 1 Against
R. I. UNANIMOUS
CONN. UNANIMOUS
NEW YORK 129 For 1 Against
PENNSYLVANIA 52 For 7 Against
N. J. 21 For 1 Against
DELAWARE UNANIMOUS
MARYLAND 8 For 6 Against
DISTRICT OF COLUMBIA UNANIMOUS
WEST VIRGINIA UNANIMOUS
VIRGINIA UNANIMOUS
NORTH CAROLINA UNANIMOUS
SOUTH CAROLINA 5 For 3 Against
GEORGIA UNANIMOUS
FLORIDA 3 For 2 Against
ALABAMA UNANIMOUS
MISSISSIPPI UNANIMOUS
LOUISIANA UNANIMOUS
TEXAS UNANIMOUS
OHIO 71 For 3 Against
KENTUCKY Not Voting
TENNESSEE UNANIMOUS
MICH. 18 For 1 Against
IND. 89 For 6 Against
ILLINOIS 100 For 1 Against
WISCONSIN 35 For 2 Against
MINN. 32 For 1 Against
IOWA UNANIMOUS
MISSOURI 37 For 1 Against
ARKANSAS UNANIMOUS
NORTH DAKOTA 9 For 1 Against
SOUTH DAKOTA UNANIMOUS
NEBRASKA UNANIMOUS
KANSAS UNANIMOUS
OKLAHOMA UNANIMOUS
MONTANA 4 For 2 Against
WYOMING Not Voting
COLORADO 15 For 1 Against
NEW MEXICO Not Voting
UTAH UNANIMOUS
ARIZONA UNANIMOUS
IDAHO UNANIMOUS
NEVADA UNANIMOUS
OREGON UNANIMOUS
WASHINGTON UNANIMOUS
CALIFORNIA 42 For 2 Against
PHILIPPINE ISLANDS UNANIMOUS
PARIS FRANCE UNANIMOUS
ALASKA UNANIMOUS
HAWAII UNANIMOUS

THE OVERWHELMING BUSINESS VOTE FOR UNIVERSAL MILITARY TRAINING

A Graphic Presentation of the Actual Vote by States Cast by Commercial and Trade Organizations in the Referenaum on National Defense Taken by the Chamber of Commerce of the United States

(HERE IS WHAT IS MOMENTOUS IN THIS CHART OF HOW 359 COMMERCIAL ORGANIZATIONS VOTED ON UNIVERSAL MILITARY TRAINING. ORGANIZATIONS IN 26 STATES VOTED *unanimously* IN FAVOR; IN 16 OTHER STATES THE VOTE WAS OVERWHELMING ALTHOUGH NOT UNANIMOUS; 5 STATES FAILED TO VOTE; IN ONLY 1 STATE WAS THE VOTE AGAINST. SUCH A DISCLOSURE OF PUBLIC OPINION IS WITHOUT PRECEDENT IN THIS COUNTRY).

How many people in the United States, even how many business men, would have ventured six months ago to predict that the commercial and trade organizations of the Chamber of Commerce of the United States, the leading business associations of the country, would come out solidly for universal military training? Yet such a prediction would, if anything, have proved short of the truth. Business men have gone further. They have registered their support of a system of universal military training which is to be enforced by law to provide adequate industrial, as well as military and naval forces, both in peace and in war. The system is not to stop short at the brink of war and turn the fate of the country over to patriotic volunteers; it is to be enforced by law to provide man power for defense in war.

Public opinion has gone forward with giant strides since the outbreak of the European war. The army and navy appropriation bills in Congress go far beyond anything ever before considered in time of peace. The navy building program of the Senate includes eight capital ships for the first year, in a scheme covering a period of three years. This very nearly measures up to the standard set in Referendum No. 15, calling for a navy second in the Atlantic with a surplus force in the Pacific big enough to protect our possessions, trade routes and the Canal. The army reorganization law has already provided for a regular force in excess of two hundred thousand men—very nearly up to the number called for by the General Staff of the Army and endorsed by the referendum. The army appropriation bill reported by the Senate Committee on Military Affairs provides for a Council of National Defense whose functions measure very closely to the combined duties of the Council of National Defense and Staff of Industrial Mobilization called for by the vote of the business men of the country. A further provision authorizes direct purchases from private firms analogous to the system of prearrangement for war supplies approved in the referendum ballot.

However, one essential element of the referendum, indeed the keystone of the arch, at time of going to press is still lacking consideration by Congress. There is no bill before either the Senate or the House which provides for a national system of universal military training. Yet publicopinion is swinging strongly to a final conclusion on this vital subject. One of the most significant indications of this was the resolution drafted at the conference of mayors of a large number of cities at St. Louis last winter. Added to that has been the active propaganda of the National Security League and a number of other patriotic associations. And now has come the overwhelming testimony from that section of opinion which is not only most conservative but which is also most closely concerned with the actual cost and with the economic problems which go with any system of universal military training. The ballot shows 889 votes in favor and only 56 against a system of universal training which shall be enforced by law to furnish men for defense in war as well as in peace. Forty-three States were represented. A responsible and intelligent element of the citizens in twenty-four of these States voted unanimously. In eighteen others the vote ranged from more than 100 to one to two to one. In only one State was the vote opposed.

It is no exaggeration to say that this is the most momentous disclosure of public opinion which has yet been produced. What does it mean?

The actual wording of the question as finally drafted in the ballot was the result of exhaustive study and discussion on the part of the committee which drew the referendum report. Here it is:

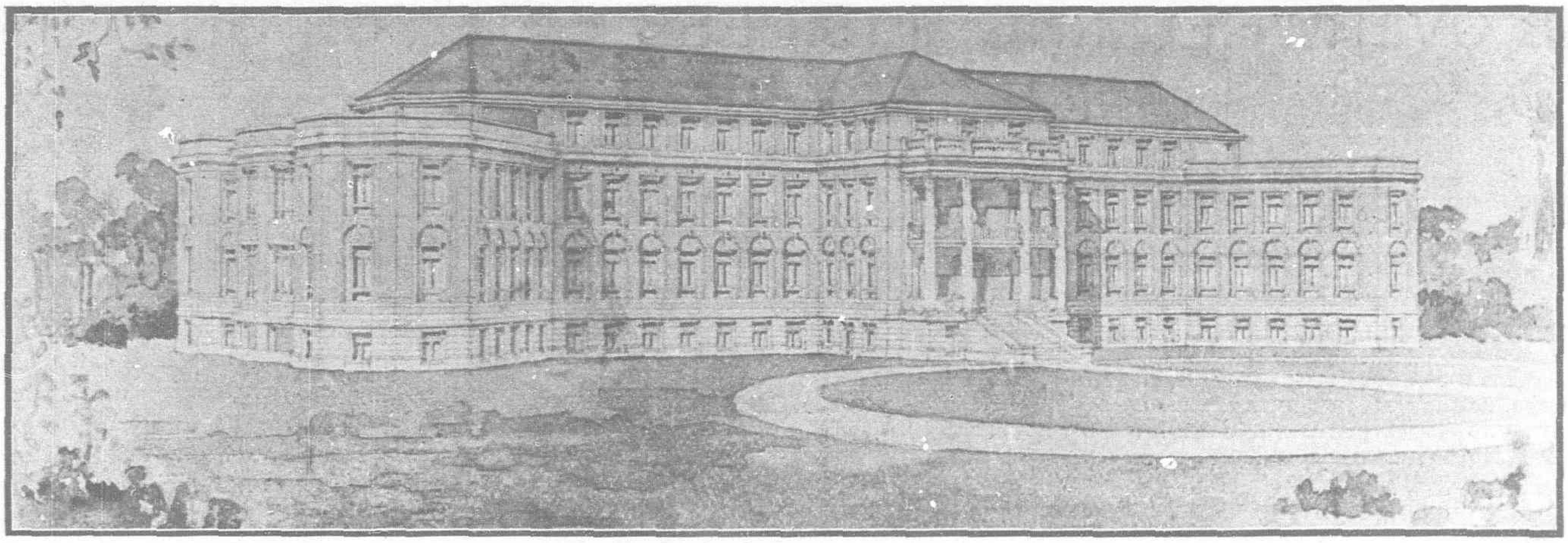
The Committee, recognizing military obligation equally with the civic obligations as a fundamental duty of democratic citizenship in a republic, and to establish a system which will affect every man alike—recommends that universal military training be adopted as a fundamental democratic principle of our military policy and be enforced by law to furnish adequate land, sea and industrial forces in peace and war.

This is not a simple statement for a ballot. But the subject is a new and complicated one for Americans and has many angles which are as yet unfamiliar in the country. The main point is that business men have now recognized the military obligation in a democracy as of equal rank with the civic duties of citizens and stated their conviction that recognition of this principle is fundamental. They have gone further, and recorded a conclusive vote that a system of universal military training is one which will affect every man alike. In other words, instead of being militaristic or aristocratic, it is a thoroughly democratic principle.

Finally, business men are not afraid of compulsory military education. They believe it will develop a better-balanced and more self-disciplined youth from which to build succeeding generations of American citizens. They have registered their opinion that it will not only prepare citizens for wars which all hope to avoid, but will fit them better for virile, substantial peace which all hope to enjoy. They do not fear the obligation of military training any more than that of taxes or of education. Few believe that if the collection of taxes were left to the compulsion of the spirit of America very much revenue would accrue. There is no less reason to believe in obligatory taxes than in obligatory defense. Long enough the patriotic and self-sacrificing volunteer has shouldered the rifle, and with it the duty, of his neighbor. Long enough has he been the victim of the loosely knit and slow-moving military machine which, in our own history, invariably results from such a system. The beginning of compulsory education was regarded by a famous English philosopher, Herbert Spencer, as the doom of progress; it has proved to be one of its mainstays. The acceptance by the American people of an equal obligation for military duty on the part of all citizens should, it is believed, prove of equal value. It is now urged emphatically by a responsible and conservative element of the public and in this movement the Chamber of Commerce of the United States will, therefore, be led necessarily, to play a large part.

THE SIAMESE SOUTHERN RAILWAY

A new section of the Siamese Southern Line was opened on July 17, some 194 kilometres in length, from Bang Na to Chumpon. This connects Chumpon with Trang and Singora, the service being on alternative days. Trains will leave Singora and Trang on Sundays, Tuesdays, and Thursdays. Trains will leave Chumpon for Trang and Singora on Tuesdays, Thursdays and Saturdays. The opening of this section leaves unfinished only a section of 86 kilometres of the main line communication between Bangkok and Singora and Trang. The uncompleted section is between Bangtaphan and Chumpon. This it is expected to open in October. The total length of line open including the Chumpon Section is 995 Kilometres. The line between Ootapo and the Kedah boundary has a total length of 48 kilometres. The earthwork is nearly finished, and rails have been laid for about 27 kilometres. The connection with the F.M.S. system, which will be available for construction trains, is expected to be made about October.



PLAN FRONT ELEVATION OF THE PEKING CENTRAL HOSPITAL

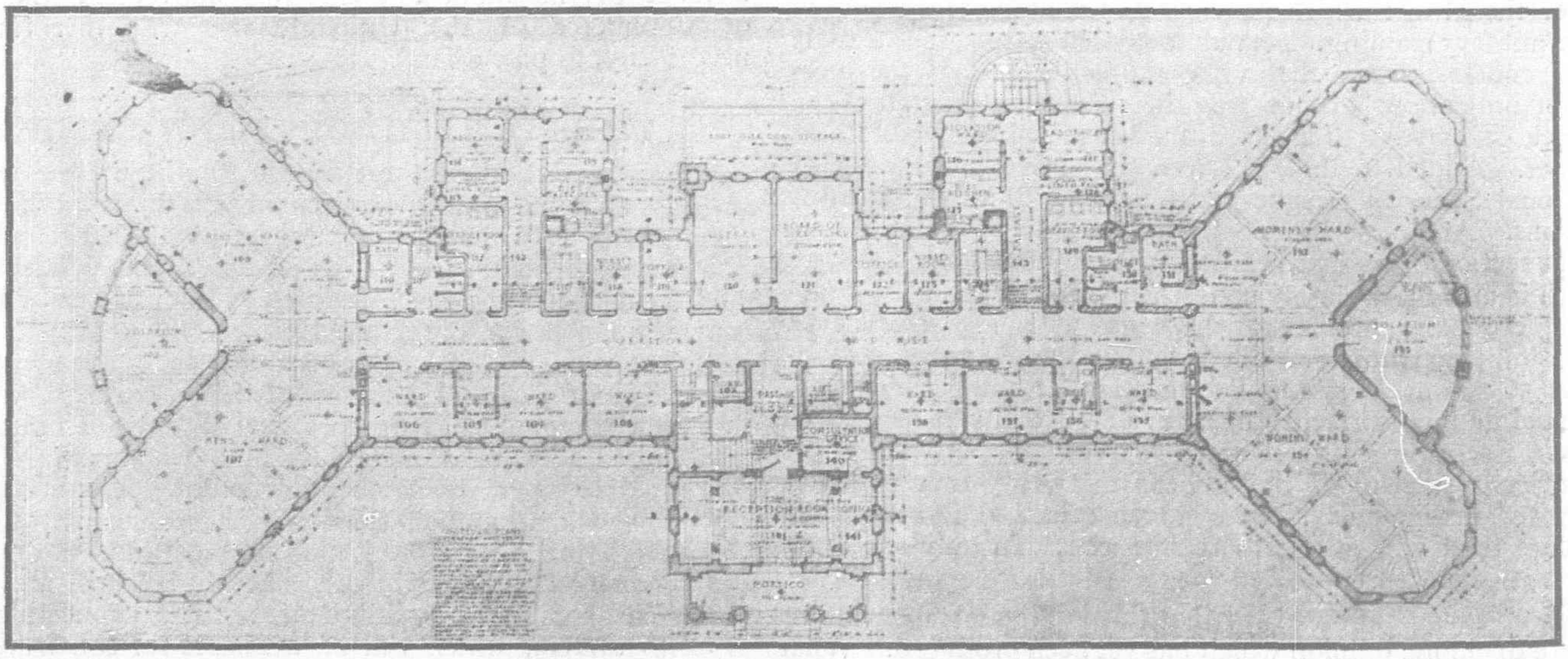
CHINESE MODERN HOSPITAL FOR PEKING

The modern buildings gradually being erected in Peking for public purposes are seriously threatening the disuse of the ancient type of picturesque architecture confined in these days to dirty if not dilapidated yamens. As time goes on all important public offices will be transferred from the mouldy, labyrinthine structures designed hundreds of years ago to compact quarters constructed on up-to-date models, a change which will in itself make for greater official efficiency if there is anything at all in the theory that environment exercises an influence upon the human mind and moulds the conduct of man.

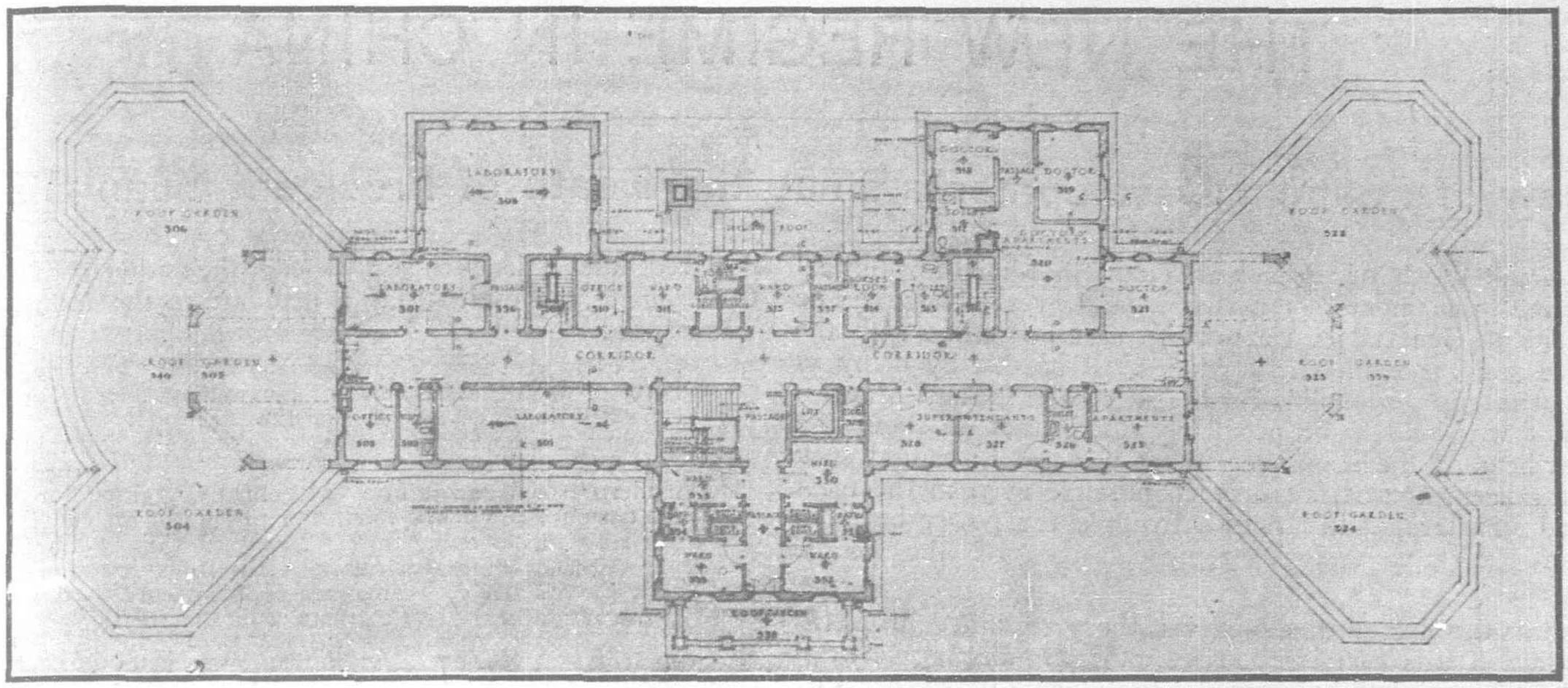
Among the important modern structures now beginning to grace the Capital is one that will be known as the Peking Central Hospital—an institution which will stand alone as the first thoroughly equipped hospital in China erected and controlled solely by Chinese.

The site of the hospital is an excellent one. It is in the western part of the city, on the main street to the gate known as the Pingchihmen, between the Temple of Imperial Ancestors and the unique Mongolian Pagoda which towers above all houses in the vicinity. Five or six acres of land were procured and upon this the building is in course of erection—a building which is to be up-to-date in all respects. To Dr. Wu Lien-teh, the organizer of the hospital, has been left the whole arrangement of building and equipment. He happens to be supported by a Board of Trustees who, an unusual thing with Chinese Boards, seem to be of a progressive turn of mind, and with a free hand is able to accomplish much more than is usually the case in China. But he has not gained his success without bitter disappointment. It has come as a result of tenacity of purpose in the face of heart-breaking official indifference or obstruction and perhaps bare-faced corruption in one outstanding incident. The conception dates back to the period immediately preceding the Revolution of 1911-12, when Dr. Wu had made such headway with his propaganda for a Central National Hospital that certain provinces had been induced to subscribe a total of Taels 50,000, which sum was placed in the hands of the then Treasurer of the institution, Prince Tsai Shun, and there it has remained ever since, prayers and threats being alike unavailing.

The scheme of operations at that time embraced co-operation with the American Red Cross, both parties to provide a moiety of the capital required, but progress along this line was rendered abortive by the outbreak of the Revolution. Temporarily interrupted in this sphere Dr. Wu Lien-teh devoted himself to the organization of a plague preventive service in Manchuria, and with a smaller annual sum from the Government than what one Peking journal describes as "the salary of a foreign adviser," he has managed to perform highly commendable work, hospitals being established in Harbin and centres along the Peking-Mukden Railway. While thus engaged the original scheme was kept in mind by Dr. Wu, and when Mr. Chow Hsueh-hsi became Minister of Finance he arranged for the provision of $100,000 as an earnest of the Government's interest in the proposal. With



FIRST FLOOR PLAN



THIRD FLOOR PLAN

this sum available a meeting of prominent Chinese was called and there a total of $200,000 was promised and the decision was made to go ahead with the work, a Board of Trustees being appointed to take charge of the finances. Mr. Tsao Ju-lin was appointed Chairman and Mr. Sze Sheng-tze Treasurer, Dr. Wu being the Medical Director in charge of the erection and equipment of the hospital. Dr. Wu was instructed to consult architects and the firm of Shattuck and Hussey, of Chicago and Peking, were engaged to design the buildings. They have planned a compact modern structure consisting of a basement and three storeys, spacious enough to accommodate the various departments of a modern hospital for 150 patients and a large number of out-patients.

The building, which faces south, is of grey brick, with a roof of red tile. The floors are reinforced concrete throughout. Heating will be effected from a central hot-water installation, with a special steam heating equipment for the operating rooms.

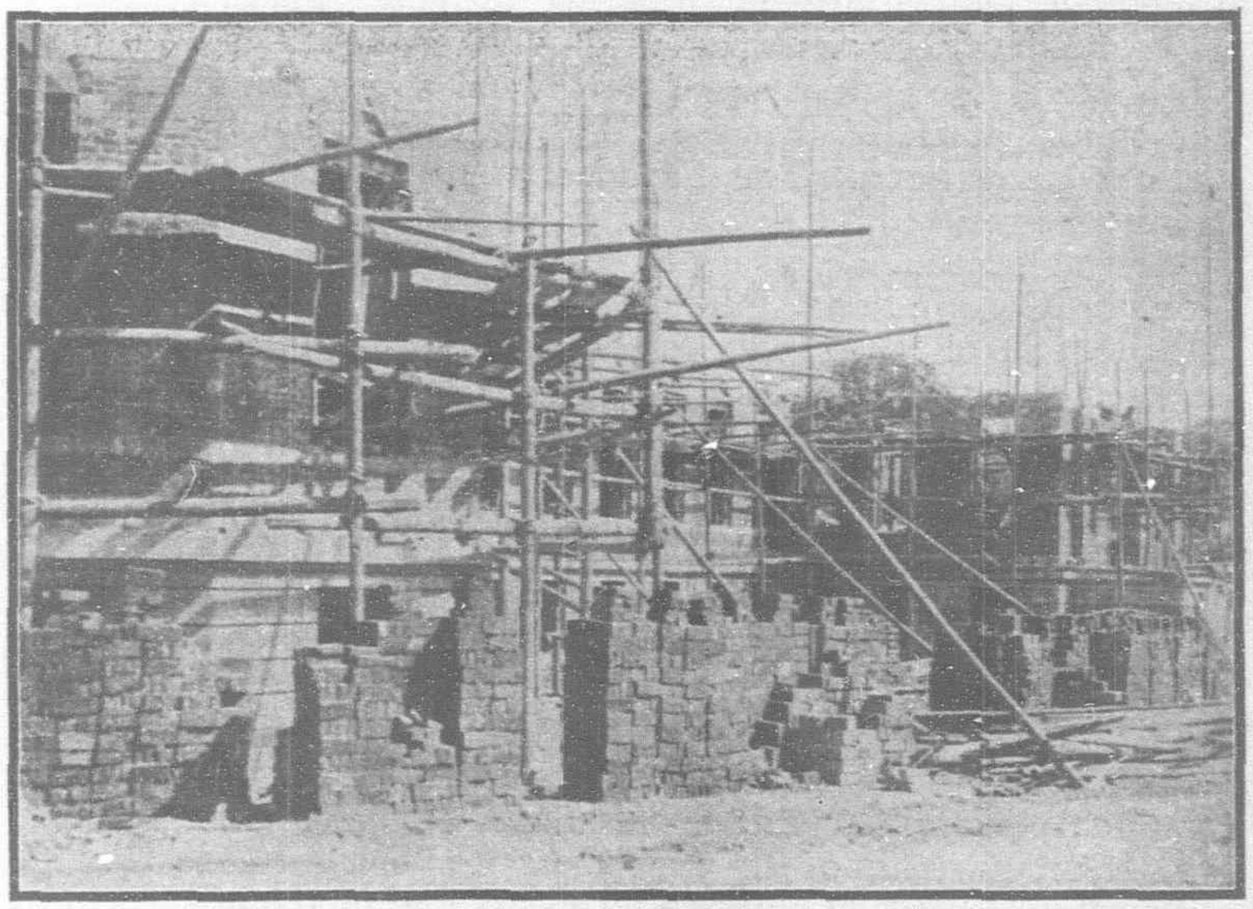
The basement will contain the out-patient department, the surgical department, medical department, skin department, opthalmic department, nose and ear, and women's departments, as well as X-ray, massage, photographic, and disinfection chambers, the kitchens and servants' quarters. All the rooms are large, well lighted, and well arranged, as is the case with the floors above.

The main entrance to the hospital is on the south side, a flight of wide granite steps leading to the first floor, where, in the centre, are the reception and consulting rooms. At each end of the building are excellent general or third-class wards, splendidly lighted, capable of accommodating 25 patients each. Lavatories, bath rooms, service rooms, diet kitchens, linen rooms, and nurses rooms are arranged in proximity to constitute distinct units. Near the general wards are the second class wards facing south. One bathroom and lavatory serves three wards and each ward accommodates two beds. The first-class wards are in the centre of the building facing south. Each has a lavatory and bathroom attached and a separate verandah. A solarium is provided at each end of the building.

The second floor is arranged in a manner similar to the first, with the exception that it contains the operating chamber, facing north. Special instrument cupboards are provided in this room with a movable auditorium for students, while an ante-room for surgeons will give ample space for private lockers, etc. Adjoining the operating theatre is an anæsthetic room, wash room, sterilizing room and recovery room.

The third floor contains more first-class wards, facing south, quarters for the superintendent and medical staff in the east wing, and chemical and bacteriological laboratory in the west wing. On the roof is a large garden for the use of patients, access being had by a lift. The building is equipped with fire escapes and water services. The furniture will be upon best hospital lines, and the equipment will be of the most modern character. Seventeen cases of surgical instruments have already been presented to the hospital by the Chinese Government.

Owing to the distance of the hospital from the city a clinic and dispensary will be established near the Chin-men (the central south gate of Peking Tartar City) for the examination of paying and other patients, and an automobile ambulance service will be maintained between the clinic and the hospital.



STATE OF BUILDING ON SEPTEMBER 25, 1916

The staff will consist of one superintendent, four resident medical officers, consulting surgeons and physicians for special departments. It is desired to utilise the services of graduates from Europe and America, of whom quite a number have returned to China, and it is hoped that other doctors will use the hospital for the treatment of their patients who may be disposed to go there. An important aim of the founders of the hospital is to make it the nucleus of a proper medical school under Chinese auspices.

The walls of the building are now erected and it is expected that the opening will take place sometime in September next.

THE NEW REGIME IN CHINA

Review of Political Developments since the Death of President Yuan Shih-kai

With the death of President Yuan Shih-kai the political situation in China underwent a sudden and great change. The new President, General Li Yuan-hung, assumed office with the confidence and goodwill of all parties. Regarded by many as the man primarily responsible for the success of the anti-Manchu rebellion, it was held to be peculiarly fitting that he should be the titular head of the Republic. That General Li should seek self-aggrandizement was not deemed possible even in the most suspicious quarters, and fears of a struggle for power between the Chief Executive and the representatives of the people disappeared.

Great as the change was, however, there remained problems whose solution was certain to prove difficult. Feeling between the north and south had been exacerbated during the progress of the anti-monarchical movement. The death of President Yuan Shih-kai suddenly transformed a number of men who had been fugitives and outlaws into powerful political factors. These men during their lengthy period of exile abroad or in the foreign settlements or concessions in China had nursed their resentment, not only against Yuan Shih-kai, but also against all those who had supported him or had been at all closely identified with the carrying out of his policies. Some of the extremists called for capital punishment of those who had supported the monarchical movement and the confiscation of their estates. The good sense of the majority, however, prevented support being given to these vindictive counsels, though it was found necessary to placate the extremists by proscribing certain prominent "monarchists."

The first definite indication that there was still a divergence of political thought between north and south was given when the south demanded that the Nanking Provisional Constitution should be restored. The Premier, General Tuan Chi-jui, for some time resisted the demand. From his point of view it was undesirable and unnecessary to change the Provisional Constitution, or Constitutional Compact of May, 1914, in view of the fact that in all probability a permanent Constitution would be enacted in a few months. The south, however, was adamant. The Nanking Provisional Constitution imposed great restrictions upon both President and Cabinet and gave paramount power to Parliament. On the other hand the Constitutional Compact vested supreme power in the hands of the President, and it was apprehended that although General Li Yuan-hung would not personally abuse his powers, the Cabinet might arrogate them to itself.

The demands made by the south in the first instance were as follow. (1) Immediate reconvocation of the former National Assembly; (2) Punishment of monarchist leaders; (3) Reorganisation of the provisional Cabinet so as to exclude all persons connected with the Chou An Hui or the movement to place the late President on the throne; (4) Control of the police and garrison in Peking to be placed in the hands of one of the southern leaders; (5) The revival of the Nanking Provisional Constitution. These demands were put forward a few days after the death of the late President. The Premier was understood to be averse to the reconvocation of the former National Assembly on the ground that it would be better to convene a smaller body representative of the provinces to pass a new Election Law so that a new Assembly could be summoned with as little delay as possible. This view was supported by General Feng Kuo-chang, the Military Governor of Kiangsu, who further recommended the revival of the Nanking Provisional Constitution by Presidential mandate. The Premier, however, deemed that it would be inadvisable to restore the Provisional Constitution by mandate as if that were done the Government might be accused of having acted unconstitutionally. The matter continued in abeyance for some time. Until June 21 there was no move on the part of any of the provinces that had declared independence to acknowledge the authority of the Central Government, but on that day a mandate in the following terms was issued:—

> A telegram from Chenwu Shang Chiang Chun Lung Chi-kuang, Director of Military Affairs of Kuangtung, states that Kuangtung cancelled its independence on the 16th inst. and that the said province will hereafter obey the orders of the Central Government, etc. The said Chiang Chun is inspired by the broad view of the modern world and is now energetically working for the unity of the nation. His public spirit and patriotism are indeed worthy of our admiration and praise. The said Chiang Chun shall now proceed to devote his attention to the future reorganisation of his province in an effective manner and to secure the maintenance of the situation in the territory under his jurisdiction.

On the same day a mandate was issued accepting the resignation of Mr. Liang Shih-yi of his post of Director General of the Revenue Council. On June 23 the resignation of Mr. Chow Tzu-chi, Minister of Finance, was accepted, and a few days later Dr. Chen Chin-tao was appointed to the post. The attitude of the Premier on the question of the Nanking Provisional Constitution was clearly defined in telegrams which he sent to the provinces and to the members of the National Assembly who had assembled in Shanghai. These telegrams were as follow:—

THE TELEGRAM TO THE PROVINCES

> "The right man has been found in Huang-pei [the President] who has succeeded to the office of the Great President. The only question of hot dispute among the people of the country, high and low, relates to the Provisional Constitution. The majority of the people advocate the adoption of the old Provisional Constitution of the 1st year. Regarding this the Government holds no prejudiced views. The sole point of controversy is about the method to be adopted for the restoration of the Provisional Constitution. Most people are willing that the same should be done by a declaration or a mandate so that time may be saved. In the opinion of the Government, however, this must not be done. To change the law by mandate is a thing condemned by all legal schools. If the step be taken without due precaution, there will be endless trouble in future. For this reason the Government has been hesitating and unwilling to become a supporter of the course put forward. Some say that the Revised Provisional Constitution of the 3rd year [Constitutional Compact] cannot be considered as a law and that it will not be an offence to cancel it by a mandate. But this is impossible. The [Revised] Provisional Constitution of the 3rd year has been in force for some time and has been repeatedly quoted as the standard for administration. If it be blotted out by one single sentence, all the laws of the nation may similarly be shaken. Not only must we take long and deliberate consideration before taking action in view of the grave consequences which this step will cause in connexion with foreign treaties, but we have also to bear in mind that domestic loans as well as decisions of the judicial courts may be revoked on the same basis, which is of course impossible.
>
> Others say the Provisional Constitution of the 3rd year derives its origin from the Provisional Constitution Conference and the Provisional Constitution Conference had its origin in the Political Council, and since all the members of the Council were appointed by the Government, they could not be considered as a legally constituted representative organ and consequently to revive the Provisional Constitution of the 1st year is tantamount merely to the cancellation of an old mandate. But this is also impossible. The reason why the people are not satisfied with the Provisional Constitution of the 3rd year is because the organ which made this law had its origin in a mandate. How then can we tolerate the idea of reviving the Provisional Constitution of the 1st year? Furthermore, the reason why the Provisional Constitution of the 3rd year has been condemned by the people because it was not made in accordance with process sanctioned by law and was therefore tantamount to an arbitrary order. Yet in spite of it all it was not until many enquiries had been made and many processes had been gone through before the suggestion was made to revise the same. How then can anyone expect the government to restore the law in force before the revision by a mere mandate? A mistake has already been made some time ago. How can we repeat the same mistake this time? I do not see why the people want to follow an example which they know to be wrong. If it is to be held that a law can be restored by a mandate, why then can it not be cancelled by a mandate also? A law then can be restored to-day and then be cancelled to-morrow. What value will there be in law when it has

reached this stage? Again, if A has the right to restore a certain law why cannot B cancel the same for the same reason? And if this can be done to the Provisional Constitution, why cannot it be done to the Permanent Constitution? If so then with every change of President there will be a change of law. What then can the people follow as a stable guide? Still others say that the desire of the people to see again the Provisional Constitution of the 1st year is such that they are unwilling to see a single day go by without it. It would therefore be better to bring it about speedily by the issue of a mandate. They seem to forget that the requirement of a law lies in its being good or bad and not whether it will come into being sooner or later. If the law is good there will be no harm if it be delayed. If it be bad then the sooner it is promulgated the worse its effect will be on the people. The whole nation will rise and censure it. Even if we were to accept the proposition that the people will not condemn such a step as a result of their eagerness to see a settled Government, we have to reckon with the possibility of our future generations rising in rebellion with this as an excuse. In extreme cases our actions may be quoted as a precedent for the purpose of wilfully violating the law. We would then have added one more blot to the everlasting history of our country. This is certainly not what the Government is willing to do. In that the Government has no prejudice respecting the re-adoption of the old Provisional Constitution of the 1st year. What we should consider is how to go about it. It is hoped that none of you gentlemen will spare your advice so that the Government MESSAGE to M. P.'S. may have some thing to go upon.

To Members of the Parliament c/o the Information Bureau of the Members of the Parliament, Avenue Paul Brunat, Shanghai. As there have been considerable controversial views respecting the question of the Provisional Constitution, the Government is not willing to make an arbitrary decision. You, gentlemen, being leading patriots of the country and well informed in law, should be able to find a happy solution. It is hoped that you will carefully consider the question and advise me as to the best method to adopt. With unspeakable expectation.

The arguments put forward by the Premier were hotly criticized by those in favour of the revival of the Provisional Constitution. It is impossible to say what action the provinces would have adopted as, almost immediately after the despatch of these telegrams the Chief Commander of the Yangtsze Fleet, Admiral Li Ting-hsin, wired to Peking declaring "independence" of the Central Government and demanding the immediate revival of the Nanking Provisional Constitution. The day that this news was published in Peking reports came from Kuangtung to the effect that fighting had occurred between the troops of General Lung Chi-kuang and those of General Li Lieh-chun, a revolutionary who attained some prominence during the 1913 rebellion. In view of the novelty of a section of the naval forces of a country declaring "independence" it is as well to put Admiral Li Ting-hsin's telegram to the Cabinet on record. It read as follows:—

"Ever since the attempted restoration of the Imperial regime, the North and the South have been divided into two camps. While the Navy was engaged in making arrangements with the Military Council of the South to support the latter, the news of the death of Yuan Shih-kai and the succession of the present Great President was announced. But reading between the lines of the declaration made by President Li, it is not difficult to see that the President's freedom of action has been greatly restricted by the followers of Yuan Shih-kai. This bears out the fact that President Li is still not free to express his own opinions. Although the great danger of the country has not yet been averted, fresh ones are following fast upon our heels. Under these circumstances, the Navy hereby announces that on and from the 25th inst. it has joined the Army for the Protection of the Country with the object of supporting the President and upholding republicanism. The Navy will not obey the orders of the Ministry of Navy in Peking until the restoration of the Provisional Constitution of the 1st Year of Min Kuo, the reassembly of Parliament and the formation of a responsible Cabinet."

The effect of this move on the part of the Navy was shown on June 29 when a mandate reviving the Provisional Constitution was issued, couched in the following terms.—

In a Republican country the will of the people is supreme; and the constitution expresses the concentrated will of the people. But the making of the constitution depends solely on the Parliament. The Parliament of the Republic of China, however, has not been reconvened ever since it ceased to meet on the 10th day of the 1st month of the 3rd year—a lapse of two years. Consequently the constitution has not yet been fixed, although the Republic has been in existence for five years; and as the great foundation has not been laid administrative progress has been impossible. In order that the will of the people may be satisfied and the foundation of the country consolidated, the Parliament should be convened and the constitution made without delay. Pending the promulgation of the constitution, the Provisional Constitution promulgated on the 11th of the 3rd month of the 1st year of the Chung Hua Min Kuo shall be observed until the Constitution [Permanent Constitution] shall be passed. As the Presidential Election Law promulgated on the 5th of the 10th month of the 2nd year is a part of the Constitution, the same shall continue to be in force.

Simultaneously mandates were issued summoning Parliament to meet on August 1; cancelling all laws relating to the Li Fa Yuan and the Citizens' Convention; abolishing the Tsan Cheng Yuan (Council of State); abolishing the Censorate, and appointing General Tuan Chi-jui Premier (his former official designation was Secretary of State). The following day a mandate was issued accepting the resignation of the Cabinet and the following new appointments were made.—Tang Shao-yi, Minister of Foreign Affairs, Hsu Shih-ying, Minister of Interior, Chen Chin-tao, Minister of Finance, Chang Yueh-tsen, Minister of Justice, Sun Hung-yi, Minister of Education, Chang Kuo-kan, Minister of Agriculture and Commerce and Wang Ta-hsieh, Minister of Communications. The Premier was to act concurrently as Minister of War and Dr. Chen Chin-tao was to act as Minister of Foreign Affairs pending the arrival of Mr. Tang Shao-yi. From the first some doubt was expressed whether Mr. Tang Shao-yi would accept the portfolio of Foreign Affairs. Mr. Wang Ta-hsieh definitely declined to accept the position of Minister of Communications a few days after his name had been gazetted.

The fighting in Kuangtung between the troops of General Lung Chi-kuang and those of General Li Lieh-chun and General Tsen Chun-hsuan continued, neither side paying the least attention to the commands of the Central Government to cease hostilities. The avowed object of Li Lieh-chun and Tsen Chun-hsuan was to drive Lung Chi-kuang out of Canton. As the Central Government had confirmed Lung in his post of Military Governor it was placed in an extremely awkward position by the independent action of Li and Tsen. A further cause of anxiety was desultory fighting in Hunan and Szechuan.

A series of mandates issued on July 7 showed that the Government was ready to do its utmost to meet the wishes of the south half-way. The provincial system established by the late President was abolished and the Peerage Law, Traitors' Law, Law on the Pardon of Rebels and Impeachment Law met the same fate. General Lu Yung-ting was appointed Military Governor of Kuangtung, while General Lung Chi-kuang was given the post of Director-General of Mining Affairs in Kuangtung and Kuangsi. General Li Lieh-chun was ordered to proceed to Peking to await an appointment, an order, it may be remarked, that he has not yet obeyed. A special deputy was ordered to investigate conditions in Kuangtung.

The members of the National Assembly who had gathered in Shanghai did not at first receive with cordiality the proposal that Parliament should be opened in Peking on August 1. In fact the counter suggestion was made that as Parliament has the right to convene itself, it should reopen in Shanghai. On July 12 certain changes were made in the Cabinet, Sun Hung-yi being appointed Minister of the Interior, Fan Yuan-lien Minister of Education and Hsu Shih-ying Minister of Communications.

The Government for some time disregarded the demand of the south that the leading "monarchists" should be punished. However on July 14 a mandate was issued in the following terms.—

The movement for the change of form of State plunged the whole country into utter confusion and nearly caused it to suffer national extinction. Those who promoted the movement must be held responsible. The arrest is hereby ordered of Yang Tu, Sun Yu-chun, Ku Ao, Liang Shih-yi, Hsia Shou-tien, Chu Chi-chien, Chow Tzu-chi and Hsueh Ta-ko, who are to be handed to the Judiciary carefully and strictly to be tried and punished according to law to the end that a warning may be registered for the guidance of future generations. Others are hereby pardoned in the interest of leniency.

It is interesting to note that no arrests in connection with this mandate have yet been made. A mandate issued simultaneously ordered the Bank of Communications, of which Mr. Liang Shih-yi is Director General, to carry on business as usual.

Early in the year the seceding provinces established a Military Council at Shaoching in Kuangtung to control the anti-monarchist troops and form a provisional Government. In some

quarters it was expected that this body would dissolve as soon as General Li Yuan-hung had effectively assumed office, but no move was made in this direction until July 17. A manifesto was then issued by the Military Council declaring its voluntary dissolution. On July 21 a mandate was issued praising the Southern leaders for their action in dissolving the Council, it being remarked:—"Their righteous reputation and benevolent name, which are as glorious as the radiance of the sun and moon, will last for endless ages to the glory and honour of the country." The "independence" of the Navy was cancelled on July 20.

The situation in Kuangtung continued to cause grave anxiety to the Government. Although General Lu Yung-ting was constantly urged to proceed to Canton without delay to take up the Military Governorship, it was not until August 6 that he announced that he was proceeding to Canton. In the meantime General Li Lieh-chun and General Tsen Chun-hsuan were continuing to attack General Lung Chi-kuang's forces. The situation in Shantung was also causing anxiety. Several thousand men who described themselves as a patriotic army continued to act independently of the Government, and complaints came from several districts that they were looting and illtreating inoffensive villagers. In Shensi also bandits were operating freely.

The Parliament was formally opened in Peking on August 1, President Li Yuan-hung being present. On August 21 the House of Representatives, with practical unanimity, elected General Tuan Chi-jui Premier, the appointment being subsequently confirmed by the Senate. The new Cabinet consisting of General Tuan Chi-jui, concurrently Minister of War; Dr. Chen Chin-tao, Minister of Finance; Mr. Tang Shao-yi, Minister of Foreign Affairs; Mr. Chang Yueh-tsen, Minister of Justice; Mr. Sun Hung-yi, Minister of Interior; Mr. Hsu Shih-ying, Minister of Communications; Mr. Kuo Chung-hsiu, Minister of Agriculture and Commerce; Mr. Fan Yuan-lien, Minister of Education; and Admiral Cheng Pi-kuang, Minister of Navy, was submitted to the House of Representatives for approval on September 1 and successfully passed the ordeal. The Senate gave its endorsement three days later. An endeavour had been made to secure the rejection of Messrs. Hsu Shih-ying and Sun Hung-yi on the ground of alleged nepotism and of Mr. Chang Yueh-tsen, Minister of Justice, on the ground that he was alleged to have been associated with an endeavour to smuggle a large quantity of Yunnan opium into Shanghai. The Parliament, however, as already stated, confirmed all the Ministers in their posts. Having disposed of this matter Parliament proceeded with ordinary business, and throughout September and October was occupied, *inter alia*, with consideration of the draft permanent Constitution. Other matters that engaged its attention were the Japanese loan of $5,000,000 and the demands presented by Japan in connection with the Chengchiatun incident on August 13, which resulted in some Chinese and Japanese soldiers being killed. As these matters have been already fully discussed in the FAR EASTERN REVIEW further reference here is not necessary beyond the statement that negotiations are still pending. The negotiations in connection with the Chengchiatun affair were delayed owing to the uncertainty that existed in regard to Mr. Tang Shao-yi's acceptance of the post of Minister of Foreign Affairs. Mr. Tang arrived at Tientsin on September 17 en route to Peking, but on September 25 he resigned and subsequently returned to Shanghai. There was considerable opposition to Mr. Tang on the part of sections of the military. A conference of military chiefs held at Hsuchowfu under the presidency of General Chang Hsun in the middle of September claimed the right to be consulted in political matters, and it is understood that Mr. Tang's resignation was a protest against military interference with politics.

Towards the end of September the sensational Press in Peking spread rumours of an alleged plot to "remove" the President with the object of establishing a military dictatorship. It was definitely stated that this plot was to be carried out on the occasion of the Republican Anniversary Review which was to be held on October 10. There appears to have been no foundation whatever in these rumours; at any rate the review passed off without incident. On September 29 a mandate had been issued which obliquely censured the military chiefs who had attended the conference at Hsuchowfu. An endeavour was made by the Government to persuade General Chang Hsun to leave Hsuchowfu and take up his post of Military Governor in Anhui, but without success.

In view of the resignation of Mr. Tang Shao-yi of the post of Minister of Foreign Affairs, which was accepted on September 29, Mr. Lu Cheng-hsiang was offered and accepted the position. Unfortunately there was considerable feeling against Mr. Lu Cheng-hsiang in the House of Representatives and when the appointment was submitted to that body for endorsement on October 3 endorsement was refused by 198 votes to 189. The position was then offered to Mr. Wang Ta-hsieh, and his name was submitted to the House of Representatives on October 17. The House refused to appoint him.

During September the position in Canton materially improved and hostilities ceased. There was an improvement also in Shantung and Shensi, but the bandits in Eastern Inner Mongolia continued to give trouble. The local Chinese officials declared that the bandits could have been suppressed without difficulty were it not for the aid extended to the bandits by Japanese, both officially and unofficially.

Reviewing the march of events during the last three or four months it will be seen that some progress has been made towards settling internal conditions. The respective powers of the civil and military authorities, however, remain undefined, and there has not been the cordial co-operation of political parties that was hoped for. The Cabinet is composed of men of different parties, and the differences have not been sunk so as to enable the carrying out of a truly national policy. The financial situation has continued to be desperate. The Government is not in receipt of sufficient revenue to meet its administrative expenses, much less to disband the tens of thousands of superfluous troops. The floating of a reorganization loan sufficiently large to place the finances of the country on a healthy basis has been prevented by the political uncertainty that has continued to prevail. Moreover the precise attitude of Japan towards China remains obscure. On the other hand the participation of a powerful American concern in railway and industrial development in China, to which reference is made elsewhere, is a hopeful indication of confidence in China's ability to overcome the obstacles which beset her path.

CHINA'S VICE-PRESIDENT

Feng Kuo-chang, one of the most able of the generals who helped to wrest the sovereignty of China from the Ching dynasty, was elected vice-president of the Chinese Republic on October 30 on the third ballot taken by Parliament, although the result was a foregone conclusion when the first ballot was announced. The second choice of the legislators was Lu Yung-ting, the military Governor of Szechuan. General Feng was elected by 520 votes to 201 cast for Lu Yung-ting. The *Peking Gazette* in describing the election, commented on the difference between the scene now and that when Yuan Shih-k'ai was chosen president.

"In 1913 the House of Parliament was surrounded by many cordons of armed soldiery and the gates were blocked by troops to prevent any of the M.P.'s escaping during the proceeding. Looking over the walls surrounding the House, one saw plainly the many troops with fixed bayonets peering into the Parliament Building, for what, every one was free to imagine himself. Yesterday only a handful of soldiers patrolled the streets to direct the traffic. With the exception of Parliamentary guards in full uniform and about half a dozen military police, there was nothing unusual about the policing of the occasion. People, including the M.Ps., moved about freely and the spectators were not subjected to close scrutiny as if they were assassins. The Republic is indeed among us. In perfect harmony with this promising atmosphere was the very orderly conduct of the members of Parliament."

There was little doubt that the public was greatly interested in the election, as was shown by the large number of spectators who crowded the galleries and overflowed. Every available seat was taken and many had to stand in the passage way. The unusually large number of Chinese ladies attracted much attention. Two galleries were completely filled by them—an unprecedented thing. Even more remarkable was the fact that many of the ladies remained until the election was finished, a tedious affair even for the average man, as the meeting lasted from 9 a.m. until well after five in the afternoon.

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COTTON MANUFACTURING IN CHINA

The day is far distant, if it ever dawns, when China is likely to provide sufficient manufactured cotton goods to meet her own demand. When it is considered that the population is somewhere between 350,000,000 and 400,000,000, that cotton material is used for the national dress; that it has hitherto been found impossible to manufacture the finer counts in China, and that imported goods, owing to the eccentricities of Chinese methods of taxation, enjoy immunity from certain charges levied on the native article, it will be realized that no immediate anxiety need be felt by those interested in the importation of cotton goods. At the same time it is well to bear in mind that China has made a start, and a good start, towards supplying some of her needs, and that there are factors in her favour which must necessarily tend to the development of local manufacturing.

An investigation made last year showed that there were then in the mills in Shanghai, the chief centre of the industry, over 500,000 spindles and about 300 looms. The difficulty of obtaining exact statistics in China is notorious, but it is estimated that the spindles in operation in the country number a million and the looms 4,000. From these figures it will be seen that Shanghai practically monopolizes the weaving industry. The counts manufactured are practically confined to 10s; 12s; 14s; 16s; 18s; and 20s, The claim has been made that an attempt to spin 32s met with success.

The amount of cotton grown in China cannot be accurately determined. All that can be said with certainty is that it is over 750,000 tons per year and under 1,000,000 tons. Formerly the staple was very short, but the introduction of new seed in some places has resulted in an improvement, and some of the Chinese cotton has been described by a competent American investigator as having good lustre, fair strength and staple from ¾" to ⅞". For mechanical looms it has been found generally advisable to use about 25% of American cotton, but in many instances only the local product is utilized. In the present stage of development of the industry the amount of cotton grown in China is ample for requirements, and cultivation can be extended almost indefinitely as the demand increases. The cost of the raw cotton, of course, fluctuates, but the cheaper qualities are usually available at from about 5 to 6 cents per pound.

Apart from the cost of the cotton itself the price of labour gives the manufacturer in China a tremendous handicap. Undoubtedly the efficiency of the Chinese operative cannot be compared with that of the European, but the difference is not so noticeable in this industry as in others. The following table of approximate cost of production will be found of interest:—

Count of Yarn	Cost of Production cents per lb.
10s	1.07
12s	1.21
14s	1.34
16s	1.48
20s	1.75

(Note: the cent, Mexican currency, is approximately of the value of a British farthing.)

The operatives work in two shifts of twelve hours, and the mills close only for twelve hours each Sunday. When working at full capacity the total annual production of the mills is between 200,000,000 and 225,000,000 pounds of yarn and 25,000,000 to 50,000,000 yards of cloth.

Costs other than labour are extremely low. Most of the mills in Shanghai are supplied with power by the Municipal Electrical plant at a very low rate. The vagaries of exchange, which are a factor of consequence in regard to imported goods, in no way disconcert those engaged in local manufacture. It is true that cotton goods manufactured locally have very little protection, the effective duty on yarn and cloth being only about 2½ to 3 per cent, but there is more than a probability that these duties will be largely increased. Such increase cannot take place at once, as China has to obtain the consent of all the Treaty Powers before modifying the tariff, but she has such a reasonable right to expect consideration for her frequently pressed request to be allowed to readjust the Customs schedule,

that it may be expected that the request will be honored as the Chinese Government gives adequate proof that it intends to fulfil the counter-obligations to which it has pledged itself. At present, as mentioned earlier in this article, not only is the amount of tariff protection exceedingly small, but locally manufactured goods are subject to heavier inland taxation than the imported article. On the imported article a single additional payment of half the import duty enables it to be sent to any portion of the interior without payment of likin, while it can be sent from one Treaty Port to another without any payment in addition to the import duty originally paid. The local article on the other hand has to pay likin if sent from one Treaty Port to another, and if it is sent far inland it has likin levied upon it at an unknown number of likin barriers. Thus it will be seen that the local manufacturer, in regard to trade with distant inland localities, is seriously handicapped against the importer. As already stated, however, it is not likely that this anomalous condition of affairs will be allowed to continue much longer. By arrangement, the increase in Customs duties will synchronise with the abolition of likin charges, and when this takes place the local manufacture will receive protection to an appreciable extent.

CHINA'S POSTAL SERVICE

Seven hundred and seventy-three million articles, letters, parcels, newspapers and postcards, were dealt with by the Chinese Postal Service during the fourth year of the Republic, according to the report of the Directorate General of Posts for 1915 which has just been issued from the press. While this huge total is an increase of 76 millions over the previous year, some ten percent, the real magnitude of the growth of the Chinese postal activities can best be seen by a comparison with the figures for the Second Year of Hsuan T'ung, the baby emperor deposed in 1911. During the six years that have intervened, many of them marked with widespread disturbance and insurrection, the total of articles handled by the post office has more than doubled and with this great increase has come about such an increase in efficiency that the failure of a letter to arrive reasonably on time is generally traceable to floods, brigandage or some cause outside the province of the postal officials.

According to the report of the number of newspapers circulated through the mails, some curbing of the press by the Government took place last year in that the total of such articles is still 19 millions behind the banner year of 1913. The report openly states that this was due to the more rigid censorship that undoubtedly drove many "agin-the-government" organs out of existence. Increases of 25 percent in the parcels post and $3,000,000 in money orders made up for the lack of second class matter lost to the post office through this censorship, and bear witness to the increasing confidence of the merchants and people in the mail order business, one of the greatest factors in the growth of postal facilities throughout the world.

To gain an adequate idea of the meaning of this great advance in postal services, one must remember that China is a country only partly developed, lacking railroads and highways, some of the outlying postal routes zigzagging up and down mountain declivities that would seem to defy even goats to cross. Nor is the service without danger. Each year's report carries its story of couriers attacked and robbed, and while the death toll for 1915 was lower, yet several couriers gave their lives in defense of the mails against brigands. In the province of Honan no less than 14 couriers were attacked, although only one was killed, while the Tibetan frontier troubles made the life of the postal couriers most precarious, 28 attacks having taken place. Six couriers were killed. Not even the water services were devoid of danger, for the mail from Szechuen was wrecked seven times in the Yangtze gorges, not a bad record, however, in view of the 730 trips made by the postal boats through these dangerous rapids.

Taken all in all, especially considering the difficulties that have to be met daily and hourly, the Chinese postal service may be congratulated on its success in maintaining its service and in speeding up the delivery of mail not only through the more densely populated sections served by rail and water routes, but in the outlying districts such as those of Kansu where the time of transit from the coast has now been reduced to one month, whereas formerly it took from sixty to ninety days. Given facilities similar to those that obtain in more advanced and better developed countries and it is certain that China's postal department which has done so well under adverse conditions, will in future measure up well with other postal services throughout the world.

CHINA'S IRON IN THE JAPAN FIRE

Peter the Great is credited with being the farthest seeing sovereign of his day in that he laid down a policy for the Russian people that has compelled them to extend their rule over wide territories until the Russian Empire now stretches from ocean to ocean and includes a domain of resources so vast and undeveloped that one fears the rest of the world will have used up all its wood and coal and iron, before Russia has more than begun to clear the ground for the opening of her treasurehouse of raw materials.

The case is not otherwise with Japan if her recent activity in the acquisition of China's iron mines is given its full value in forecasting events. Only she is confronted by lands already fully occupied by races in competition with whom the Japanese cannot make a living in agriculture or handicrafts. But Japan, perceiving this factor, has planned to push Peter's policy just a notch further and instead of asking for the lands, she is in the position of saying, "Keep your lands, but give me their resources."

That is what it will amount to if the present rate of acquisition of mining, especially iron mining, properties in China is kept up. Japan has developed just far enough to have a broad outlook on the future of her manufactures. She sees that without iron, she will forever be at the mercy of the more fortunate nations over whose once submerged lands nature laid a blanket of hematite and other ores of iron beside which has arisen that most potent force of modern civilization, the blast furnace and the rolling mill.

Japan has seen the writing on the wall, great dazzling letters of molten iron that spell: "Thus far shalt thou go and no further." She has interpreted it aright and perceived that without iron her industries cannot reach their full measure of competition with the foreigner. Without iron, her forty odd millions must be doomed forever to futile handicrafts of whose products the world eventually will tire. Given unlimited supplies of the brown earth which she can turn into steel with her unlimited mines of coal, Japan sees world domination in an industrial sense as her ultimate goal, and one which she believes she can reach through her resources of cheap yet skilled labor, her ability to counterfeit every foreign product—imitation which the Japanese argue and hope may later lead to origination—and her willingness to employ every national resource, her own and China's too, if need be, in the extension of her foreign commerce.

To be sure it is a litttle rough on China to have to hand over the iron mines, but she is doing nothing with them herself, say the Japanese, and as China has neither the capital nor the ability to develop them, it were a shame, the Japanese argue, for them to sit idly by and wait until China shall awake to a realization of the meaning of iron and steel in modern civilization. Even the most hearty well wisher of China cannot fail to give Japan the credit for her foresight and certainly no observer of the events of the last few years in the Orient can fail to contrast the forward march of the Japanese with the seeming apathy of the Chinese in regard to their country's development. Perhaps apathy is too strong a term, since it is rather lack of leaders and an utter absence of that co-operation so necessary for the successful completion of any large enterprise. But the result is the same, and week by week the iron mines of China are passing into the hands of so-called Sino-Japanese companies. In these the participation of the Chinese is purely passive, and the

nclusion of Chinese directors is a mere fiction to comply with he popular cry that China's resources are for the Chinese.

To be sure, the mines are not being handed over without protest from the provinces, but having made their protests, the provincial authorities fold their hands and ask what more can they do. If the Government pays no heed to their outcry, the blame is not with the provinces but with those in Peking. It may comfort the provinces to have passed the responsibility on to some one else, but the eventual result is the same—Japan will rule China with the rod of iron she has forged from China's own mines.

If the Chinese people could drop for a time the idea of family and clan, and get down to real co-operation, there is sufficient money in most of the provinces to open the mines and convert their latent resources into actual wealth. If the Chinese doubt the ability of their own people to mine the iron and convert it into rails and bars and sheets of steel, surely there is enough of this sort of ability in the world and it can be bought for a price. At that almost any price would be cheap compared with the price that China will some day pay unless she turns her hand at once to the conservation of her iron in the only way it can be conserved, by development and use.

BUILDING ACTIVITIES OF SHANGHAI

(*Continued from the September Issue*)

In the September issue of the FAR EASTERN REVIEW were shown a number of the many new buildings that have been or are being erected to care for the rapid increase in business and residential requirements of this fastest growing city of the Far East. Owing to lack of space, in some cases the descriptions of the buildings there illustrated had to be carried over to the present issue.

Yangtse Insurance Association Building

Another handsome structure that is being erected on the Bund is the seven-story reinforced concrete building for the Yangtse Insurance Association from Plans of Messrs. Palmer and Turner. This structure which will be faced with granite, occupies a site fifty feet frontage on the Bund with a depth of 117 feet and is situated between the Peninsular and Oriental Steamship office and the Jardine Matheson Hong. The ground floor will be occupied by a bank, while the Yangtse Insurance Association will take the entire first floor for its offices. The second, third and fourth floors will be divided for offices while the two upper stories will be residential quarters, the whole being topped by a roof garden which will be 115 feet above the street level.

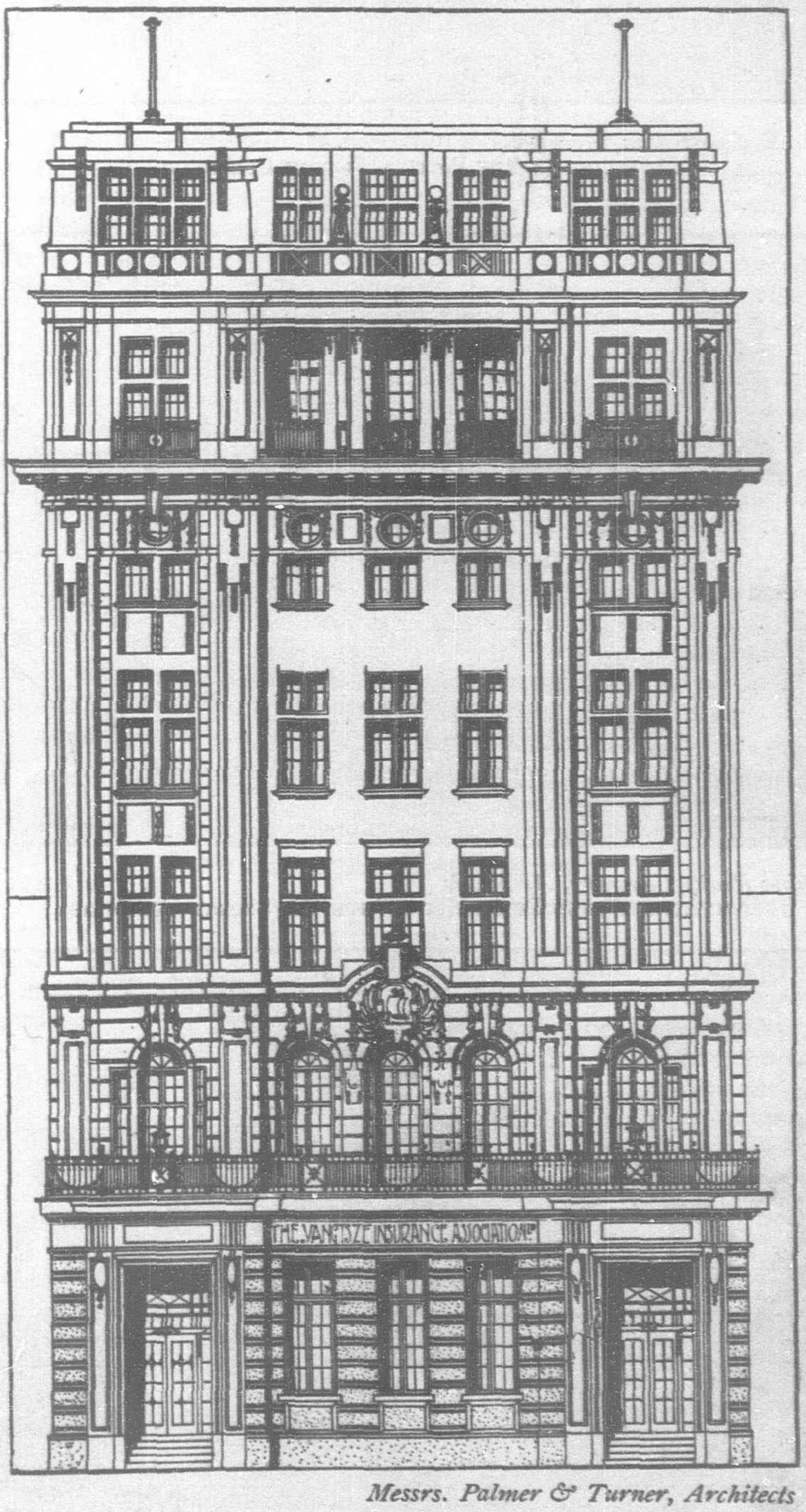
The building will have a handsome marble entrance contrasting with the severer granite facing and every fitting will be chosen with an endeavor to making this building the most modern and best equipped structure of its kind in Shanghai. The board room of the insurance company's quarters will be panelled in teak which material will be used for doors and panellings throughout the building including the dining rooms and halls of the residential quarters of the upper stories. As there will be only one residence on each of the two top floors, the quarters there will be commodious in the extreme. A feature of the fittings of this building will be the use of metal sash throughout and the latest sanitary appliances will be installed in every department of the structure.

Russian Consulate General

This building, illustrated in the September, issue which is nearing completion is situated on a prominent site near the Garden Bridge opposite the Astor House Hotel and takes up a conspicuous place in the Consular quarter of Shanghai.

The ground available was not extensive and it was not easy to meet the necessary requirements of providing suitable accommodation for the offices as well as residential quarters for the Consul-General and two vice-Consuls and several minor officials. On account of the limited ground it was necessary to make arrangements for placing servants quarters, kitchens, store rooms, etc., in a basement. The building consists of a basement, ground floor, first floor, second floor and a finished attic which is available also for servants quarters, store rooms, etc.

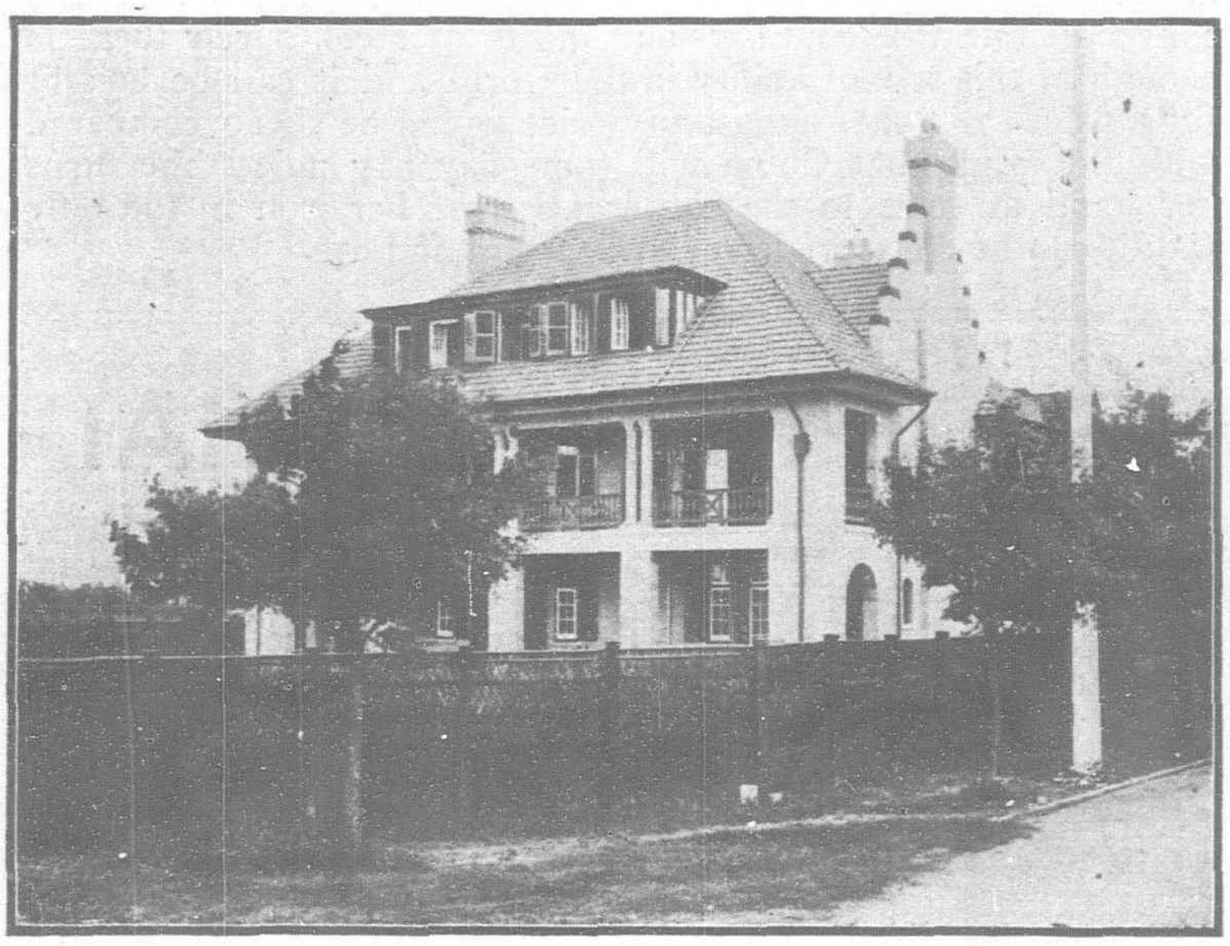
The ground floor contains besides the necessary office quarters a court room and a large assembly hall. The two latter are according to their purpose finished in a dignified and artistic manner with dados and wooden ceilings of teakwood. The first floor contains principally the reception and living rooms of the Consul-General besides the quarters for one vice-Consul. There are two large drawing rooms and two spacious dining rooms which can be combined for festival purposes. Adjoining



Messrs. Palmer & Turner, Architects

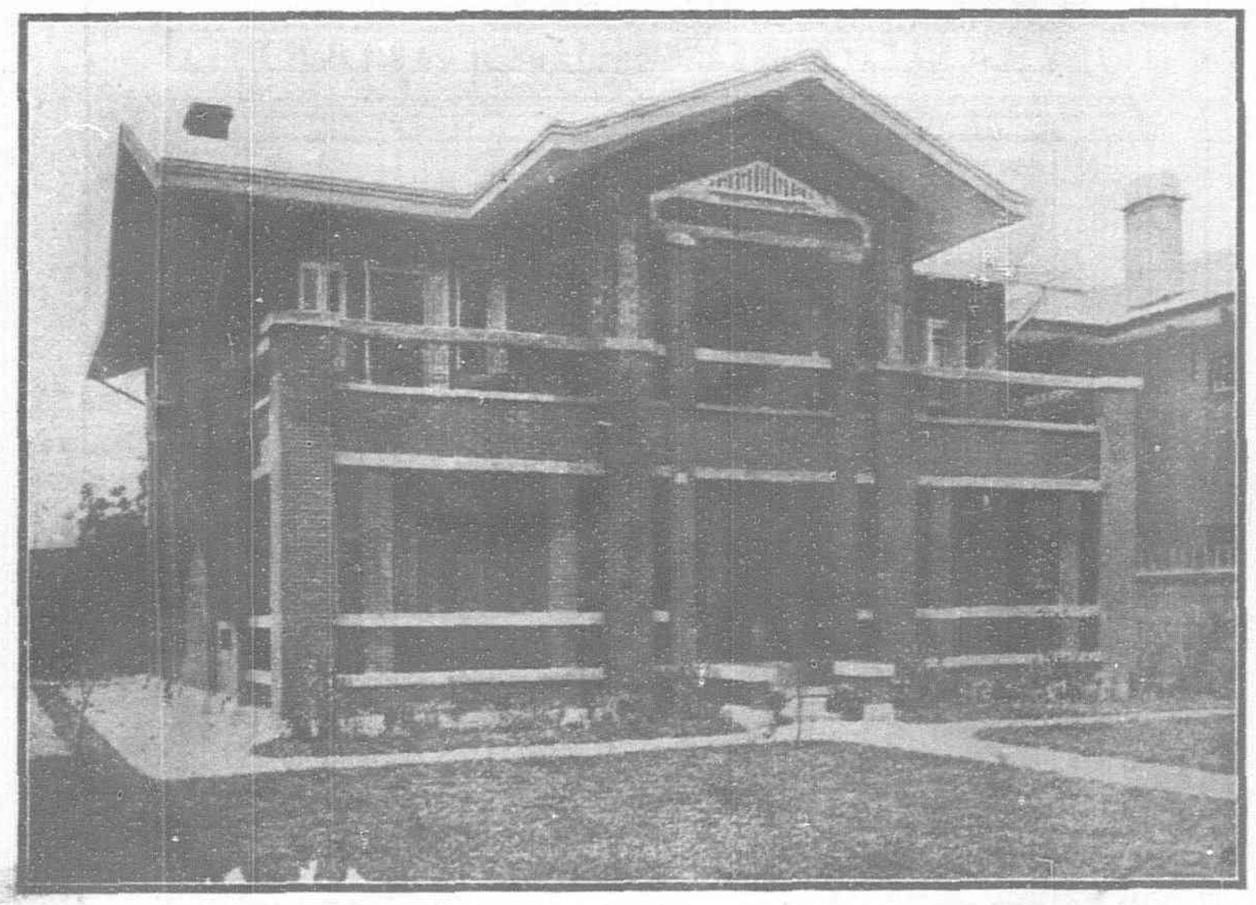
YANGTSE INSURANCE BUILDING NOW IN COURSE OF CONSTRUCTION ON THE BUND

EXAMPLES OF SHANGHAI'S MODERN RESIDENCES



R. E. Stewardson, Architect
DWELLING ON RUE POTTIER, FRENCH CONCESSION

R. E. Stewardson, Architect
MODERN DWELLING WITH UPPER AND LOWER VERANDAS



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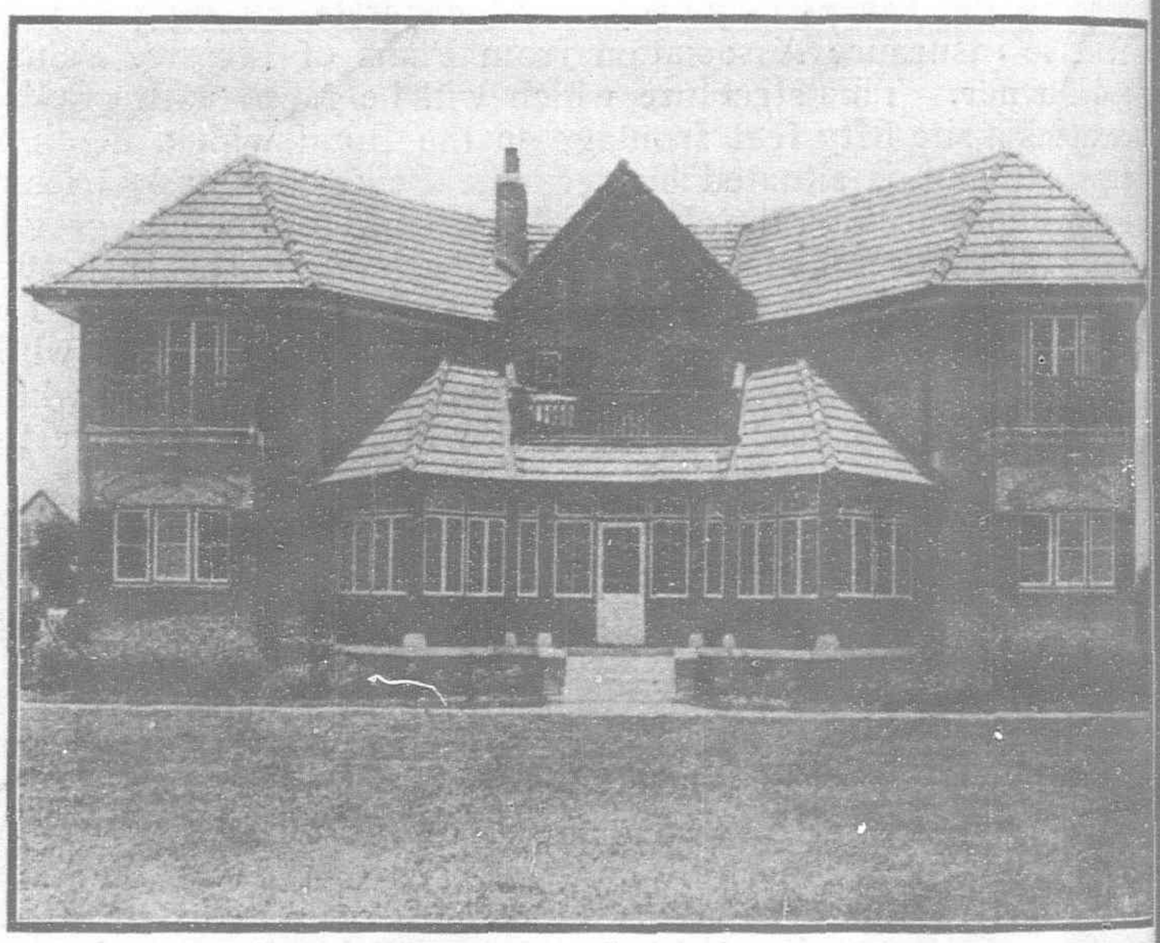
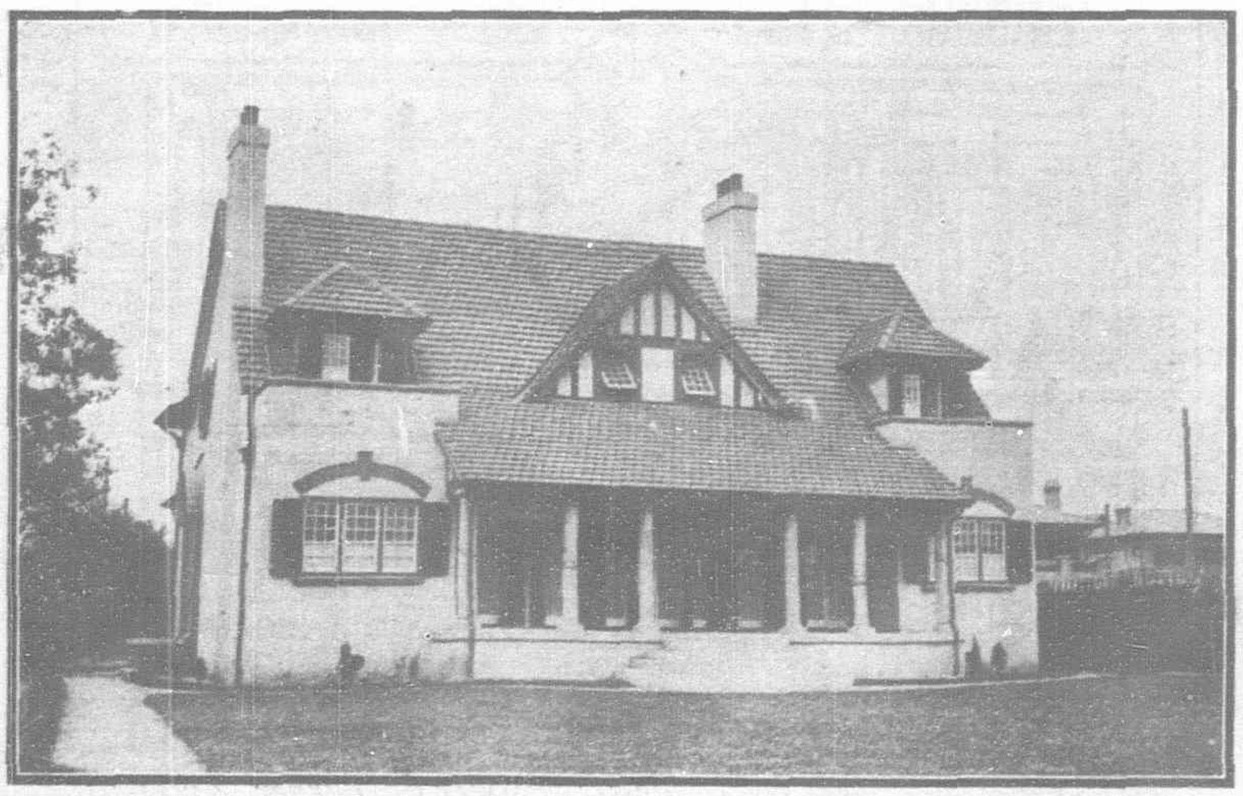
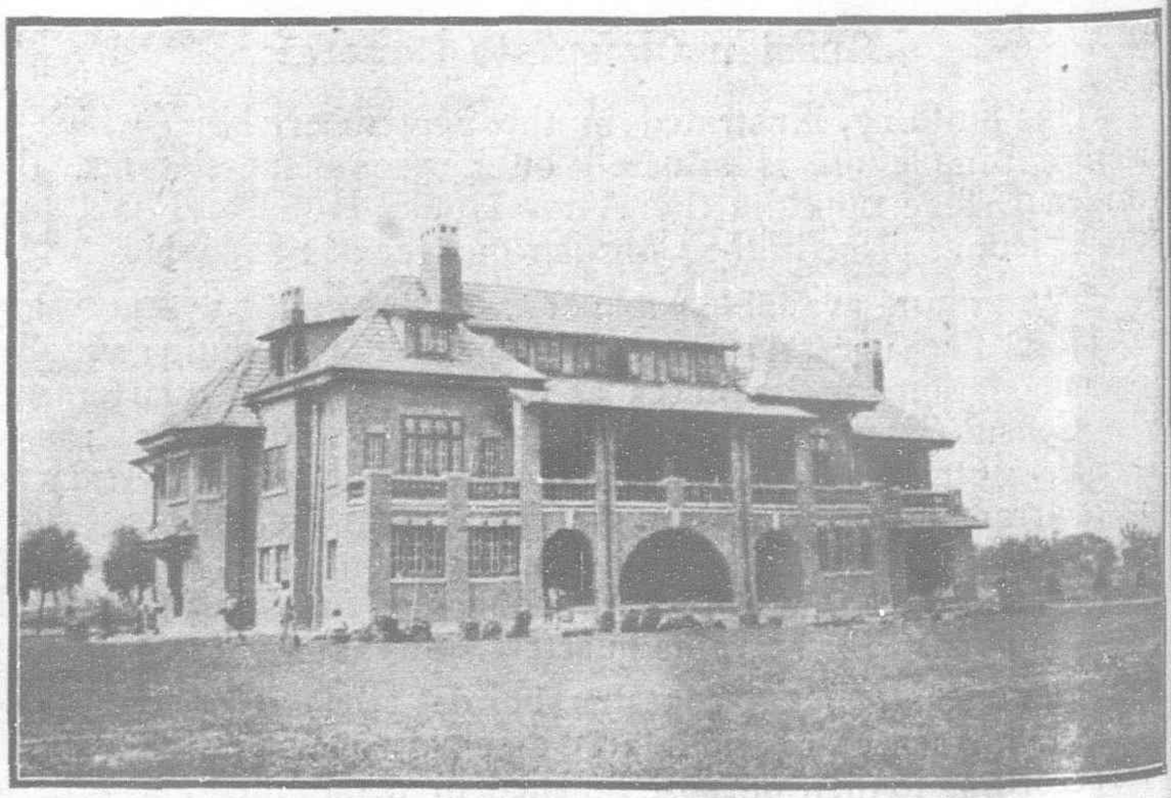
AMERICAN DESIGN BRICK HOUSE WITH EVE SHADED VERANDAS



China Realty Company, Architects
ENGLISH STYLE COTTAGE WITH REMOVABLE VERANDA GLAZING



China Realty Company, Architects
COUNTRY COTTAGE MODIFIED FROM ENGLISH MODEL



China Realty Company, Architects
STATELY DWELLING SUGGESTING ENGLISH COUNTRYHOUSE

s a study which is connected by a circular stair case with the private office of the Consul-General on the ground floor. The second floor contains the roomy bed and bath rooms for the Consul-General and the living quarters for another Vice-Consul.

The building is constructed in the exterior of concrete blocks chiseled to give them the appearance of real stone; reinforced concrete is used extensively for the inner construction especially in the ceiling of the basement and fireproof staircases. The building is heated by a central hot water system. For decorative purposes the drawing rooms and the assembly hall are provided with marble fire places. For the climatic requirements large verandahs are provided on the south side.

The style of the building is modern and the interior fittings are simple and effort has been made to employ only first class material, as teak and marble.

The execution of the building has been entrusted to the Chinese Contractor Chow Soey Kee. The heating plant, the fitting of the bath rooms, kitchens, pantry, etc., has been executed by the Shanghai Waterworks.

Messrs. Anderson, Meyer & Co., Ltd., have installed the electric light. The plans and the supervision of the building have been in the hands of the Architect Hans E. Lieb.

North China Insurance Company's Building

This imposing building at South-East corner of the junction of Kiukiang and Szechuen Roads, now in course of construction, when completed, will house The North China Insurance Co., Ltd., on the ground floor. The first, second and third floors contain up-to-date, well lighted offices fitted with all the latest conveniences. The entrance to these floors is on Szechuen Road.

In the construction of this building, great care has been taken to make it as fire-resisting as possible, all staircases, floors, etc., being of re-inforced concrete, the sash and window fittings of steel, and a complete fire service will be installed.

The principal elevations are entirely of granite and a dignified columnar treatment is the key note of the design, eight large columns rising to a height of 44 feet from the pavement, supporting the entablature (including the main cornice) and third floor. The corner is treated very simply, the main entrance to The North China Insurance Co.'s office being the only feature on otherwise plain rusticated walling.

Due regard has been given to the sanitary arrangements, separate lavatories, etc., being provided for foreigners (men and women) and Chinese.

The photograph in the September issue is of a half-inch scale model of the building, and is of interest in showing the abilities of the local Chinese carpenters in this class of work. The architect of this building is Mr. R. E. Stewardson, A.R.I.B.A., 22 Yuen Ming Yuen Road.

Two Telephone Exchange Buildings

Another noteworthy building by Mr. Stewardson is the Shanghai Mutual Telephone Company's new West Exchange at Bubbling Well and Burkill Roads. It is of re-inforced concrete construction and is designed to admit of adding two additional stories, which, in view of the extraordinary growth of the telephone system, it is contemplated will have to be constructed at no distant date. Owing to the cramped nature of the site, it was found necessary to build right up to the eastern boundary, thus avoiding loss of space on this, the most valuable part of the site. This was made possible only by carrying the eastern wall on a system of cantilevers and beams.

During the construction of this Exchange, the then existing temporary Exchange had to be undisturbed, and was built around. All instruments, switch boards, etc., were lowered into position on completion of the new building, only a few hours interruption, in the early morning, being necessary to complete this delicate operation.

Owing to future additions having to be allowed for, the finished design could not be carried out in this building. When completed, a pilaster treatment of façades will be the result, the existing main cornice becoming a secondary string course, provision for this transformation being allowed for.

Owing to the great expansion in business of The Shanghai Mutual Telephone Company, Ltd., it also has been found necessary to construct at the corner of Haining and Fusan Roads, the North Exchange which will be a three storied building with its main entrance on Fusan Road. In the rear of the yard will be a garage for the company's vehicles, and living quarters for Chinese, lavatories, etc. On the first floor is the test and accumulator rooms, day and night operators' rooms, and superintendent's flat. On the second floor is the exchange and supervisor's retiring rooms.

The construction is of re-inforced concrete throughout, with windows of steel, the glazing of all windows facing adjoining properties being of wired glass, all such windows being fitted with armoured shutters. In this, as at the West Exchange, a simple pilaster treatment of the façades surmounted by main cornice and balustrade is adopted.

Iron Merchants' Association Building

The important Iron Merchants' Association which owns the fine new premises illustrated in the September issue, was formed in 1912, the original founders being Messrs. Loh Bai-tsze, Ching Poo Yuen, Chan Tsze Chong, and Chan Chun Yuen. In 1915 the premises originally occupied by the Association on Ningpo Road were found to be quite inadequate, and the Association decided to erect suitable modern premises as a Club building, and for this purpose purchased a site on Hongkong Road adjoining the head offices of the Shanghai Waterworks Co. The preparation of the plans was entrusted to Messrs. Denham & Rose, Architects. The building was begun in September, 1915, and it was occupied in the following May.

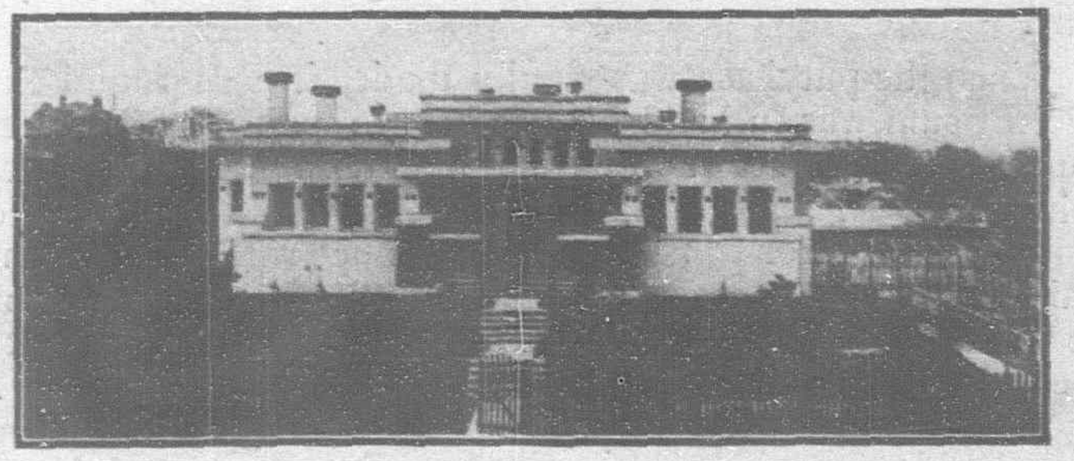
On the Ground floor are the Club Room, 30 ft. × 27 ft., with two smaller rooms. The first floor consists of the general dining room and two private rooms. There are tiled lavatories and serving rooms on both these floors, and the kitchen and servants' rooms are situated in the rear. The second floor is arranged as a residential flat. The roof is flat and is arranged as a roof garden, approached from the main stairs, and is laid with Pabco Concrete.

The building has a granite base. The upper walls are of brick faced with cement stucco, with artificial stone columns and cornices. The front and back stairs are of fireproof construction. The former is faced with Sicilian marble, supplied by Messrs. Wm. Jacks & Co. The tiles and hardware were supplied by Messrs. Duncan & Co. who also carried out the roofing. The floors throughout are of Kapore hardwood, and the principal rooms are panelled to 8ft high. The wood was supplied by the Import & Export Lumber Coy. The Building Contractor was Mr. Tseng Seng-kee.

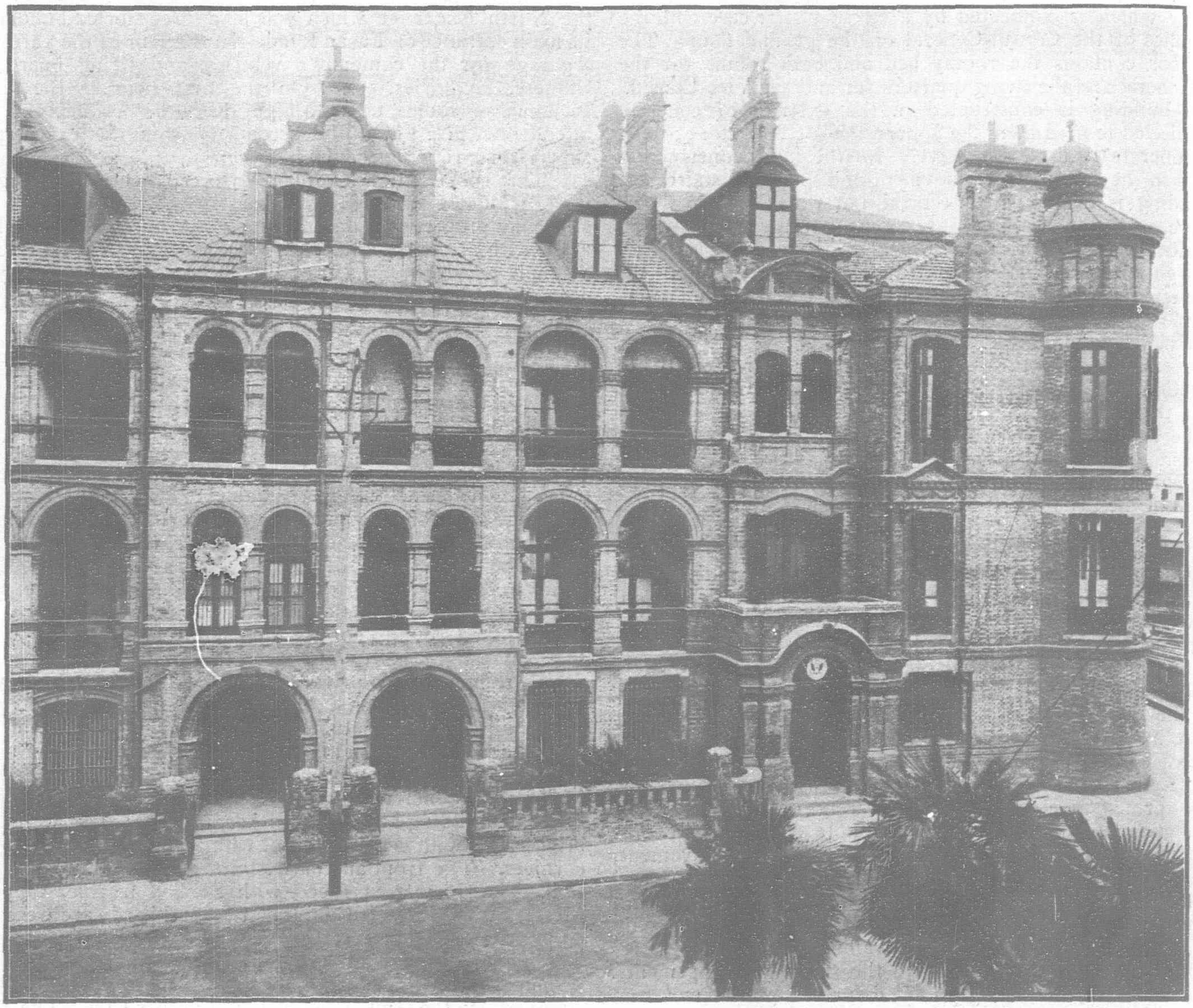
The electric installation was carried out by Messrs. Andersen, Meyer & Co. including "Veluria" ceiling lights, and the sanitary fixtures were provided by the Shanghai Waterworks Co. The Iron Merchants' Club is to be congratulated on its enterprise in possessing an up-to-date Club Building which will doubtless contribute largely to its future prosperity.

New Shanghai Residences

With the great growth of the city commercially, a great increase in residence facilities has become necessary and on the opposite page are shown a few examples of the many noteworthy new dwelling houses. So great has been the demand for residence sites that many roads which were once dismissed as being too far out for such use now are fringed with handsome structures of brick, concrete and stucco, many of them surrounded by beautiful lawns and gardens where only two years ago the Chinese agriculturist pursued the even tenor of his truck farming.



China Realty Company, Architects
FIRST BUNGALOW BUILT IN SHANGHAI



PRESENT QUARTERS OF AMERICAN CONSULATE GENERAL, SHANGHAI. POST OFFICE IN GROUND FLOOR OF BUILDING AT LEFT

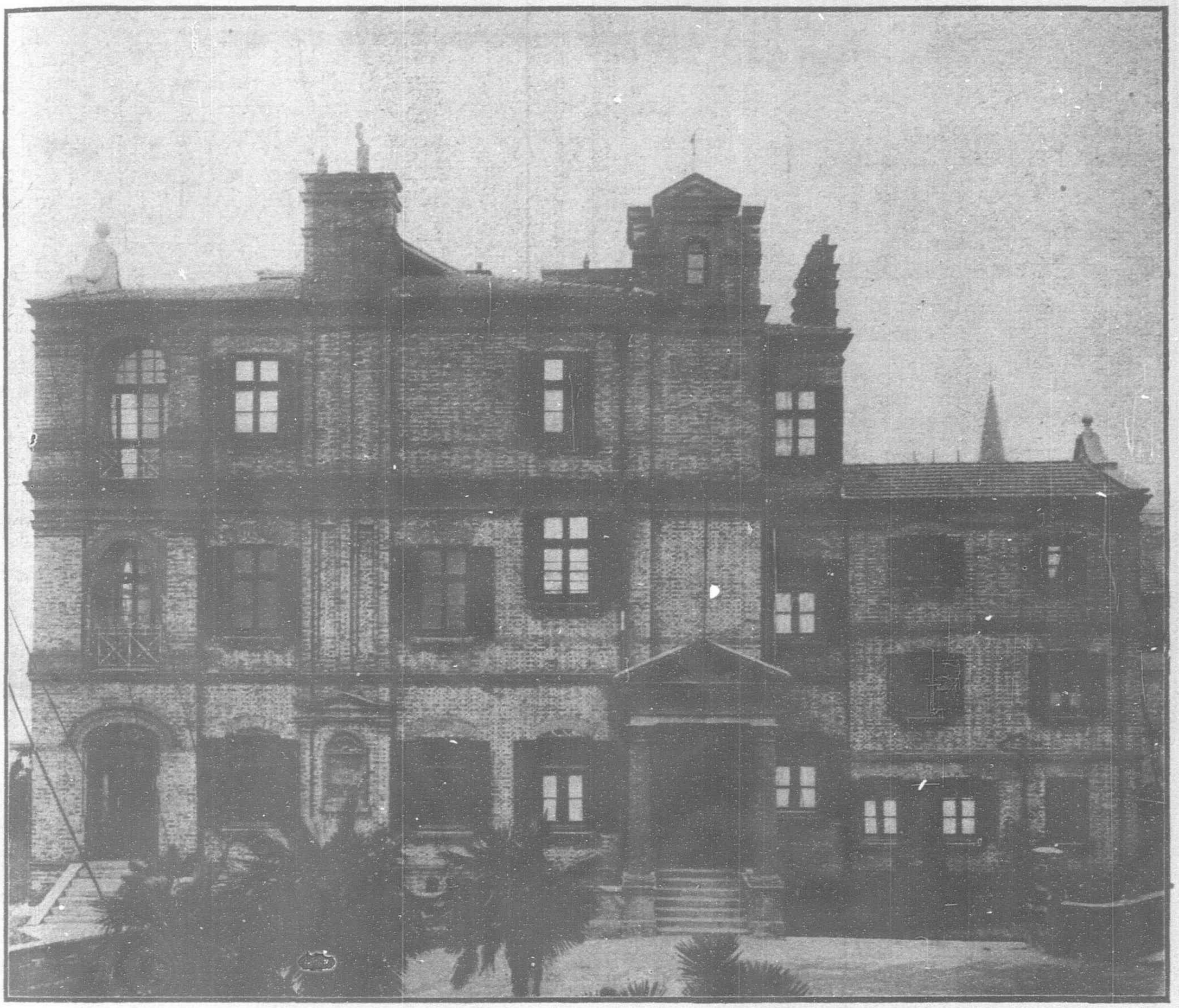
UNITED STATES ACQUIRES CONSULAR BUILDING SITE

In the August issue of the FAR EASTERN REVIEW announcement was made of the purchase by the United States Government of the site at the junction of the Whangpoo river and Soochow creek, about an acre of ground, on which it is proposed to erect suitable buildings for the offices of the Consulate General, the American Court for China and the United States Postal Agency. On this page is shown the existing Consular quarters and at the top of the following page is the building now occupied by the Court.

When the purchase was finally made, it was found that a sufficient sum was in hand for necessary repairs and the question at once arose whether it would not be advisable in consideration of the wretched state of the present buildings, to construct a suitable building for consular offices at once rather than to make repairs to structures that had almost outlived their usefulness. The difficulty was that the funds available were insufficient for the erection of anything but a makeshift building at best. Any structure that could be built with the money in hand would hardly be big enough for the consular offices alone, and there was also the Court and postal agency to be taken care of.

The matter was one which aroused considerable discussion among American residents in Shanghai, and finally a meeting was called to consider it and to make recommendations to the Consulate General. It was the sentiment at this meeting, which representatives of all the American organizations attended, that any building that could be constructed with the funds available would be utterly wasted when the time came for the erection of a Consulate General worthy the site and that it would be folly to put money into what would at best be only a temporary expedient.

In the Orient, especially in China where the item of "face" or outward appearance is so vital a factor, it was felt that any building erected on the Consular site must be one worthy the nation whose offices it is to house. The location of the property is such a commanding one, with a frontage of more than 250 feet on the water, and lying immediately opposite the public garden, that it was felt any makeshift building would call into question in the Chinese mind the resources of the nation that would use a site worth half a million taels for a building costing only a tenth of that sum.

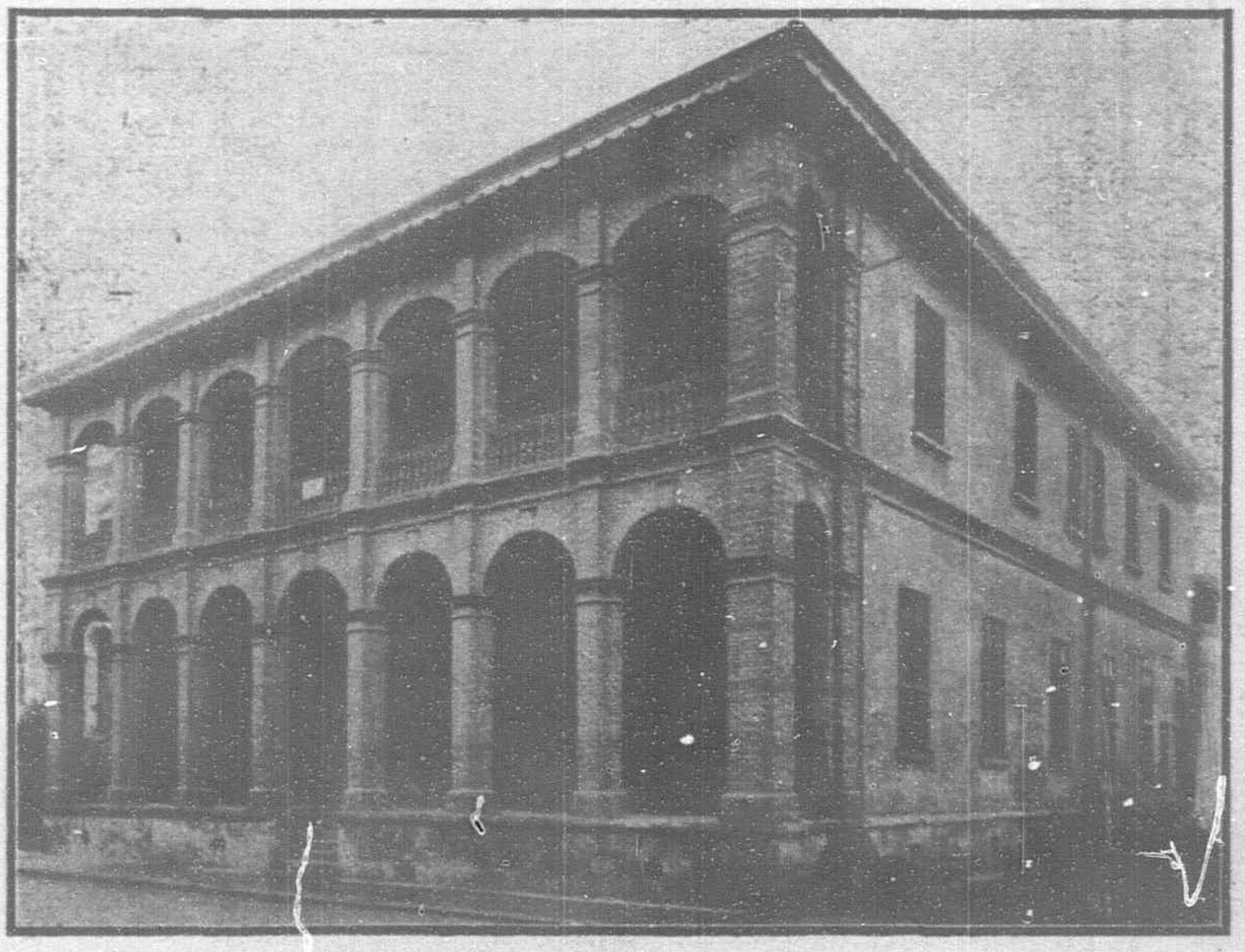


UNITED STATES COURT FOR CHINA WITH COURTROOM ON GROUND FLOOR, JUDGE'S CHAMBERS AND OFFICE OF DISTRICT ATTORNEY ABOVE

The present buildings whose repair will be undertaken at once, were erected in 1898, and reports of those who are familiar with the methods and materials of their construction state that it is a wonder they have stood so long. In fact, such serious settling of the foundations of some of them took place a few years after they were built that it was feared they would collapse. This was staved off by repairs, but the architects who have been consulted, state that no matter what repairs are now made, the buildings never will be fit for occupancy as offices as they are dingy, dark and damp, and about as far from the ideal of an American office structure as can be imagined. No amount of remodelling will make them other than poorly designed and worse constructed dwellings.

Nevertheless, the whole American community in Shanghai is exceedingly pleased that the consulate at last is in permanent quarters and that the fear of having to seek some other location, perhaps on some back street no longer exists. For several years prior to the rental of the buildings that the Consulate now owns, it was compelled to occupy a tumbledown structure far from the business section. This building, illustrated at the bottom of this page, was so utterly unfitted for any kind of human occupancy that it has remained unrented ever since the American Consulate was removed to the new site, a matter of seven years.

As Shanghai transacts more than half of the import and export trade of China, and as American interests in both branches of commerce are rapidly increasing, its citizens are hoping that Congress may take favorable action regarding an appropriation for a building which will be worthy the dignity of the United States and which will demonstrate to the Oriental world the best ideals of American architecture.



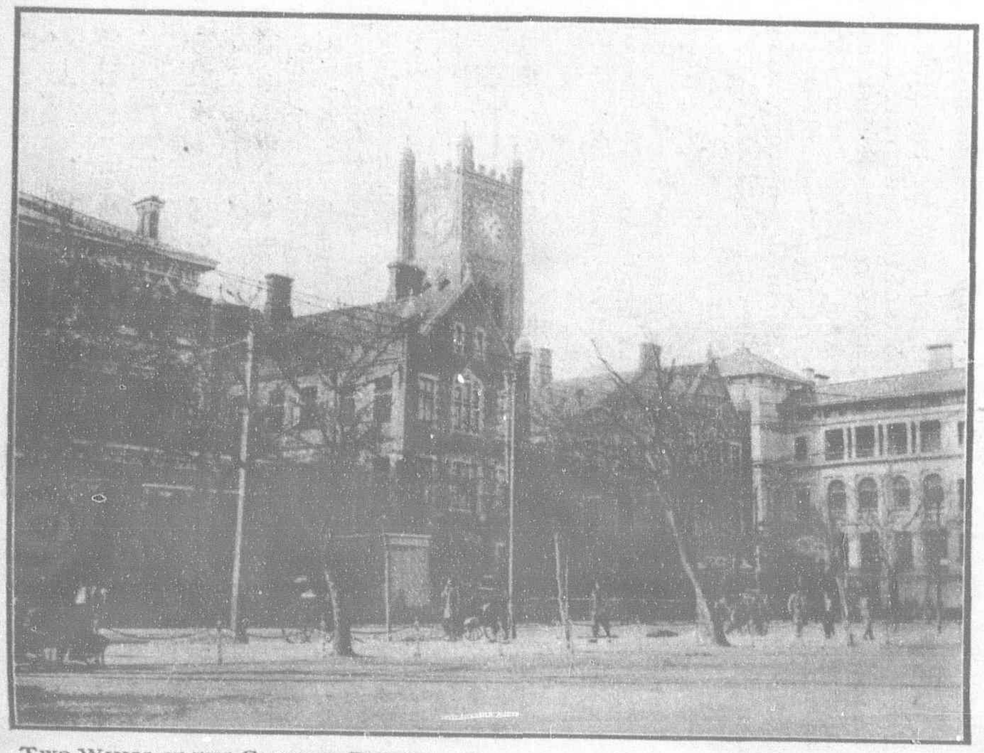
RAMSHACKLE DWELLING WHICH ONCE HOUSED AMERICAN CONSULATE—HAS STOOD VACANT EVER SINCE CONSULATE MOVED, SEVEN YEARS AGO

VIEWS OF NOTABLE BUILDINGS ALONG THE SHANGHAI BUND

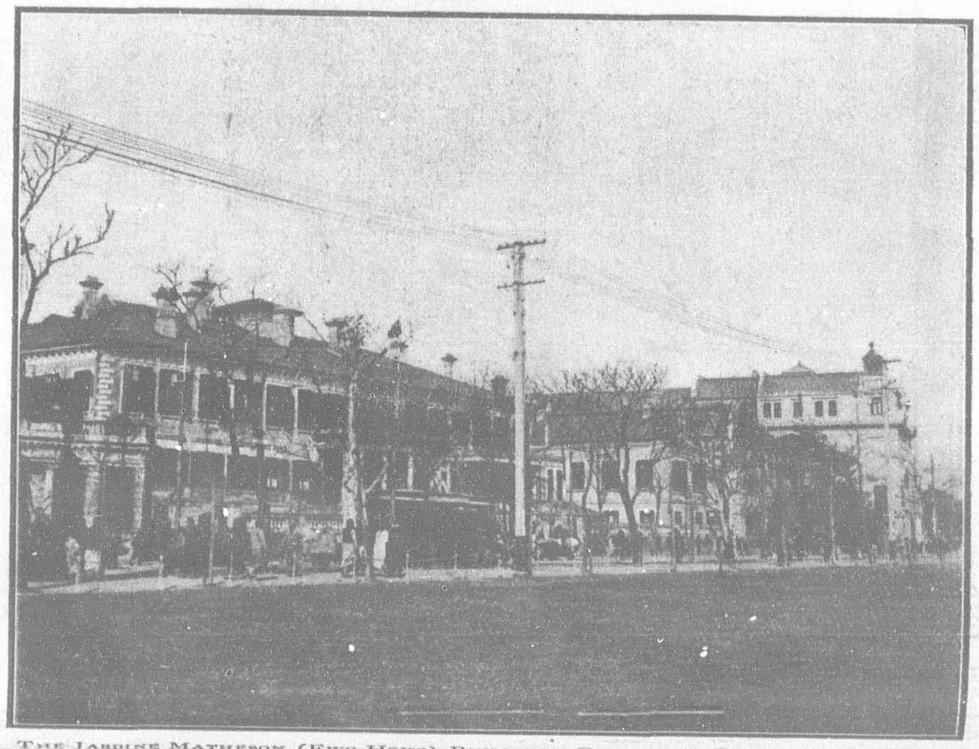
STRETCH OF THE BUND FROM THE CABLE COMPANIES OFFICES (ON LEFT) TO PALACE HOTEL

SIR ROBERT HART

THE BUND FROM THE BANK OF TAIWAN TO THE CLUB CONCORDIA (ON RIGHT)



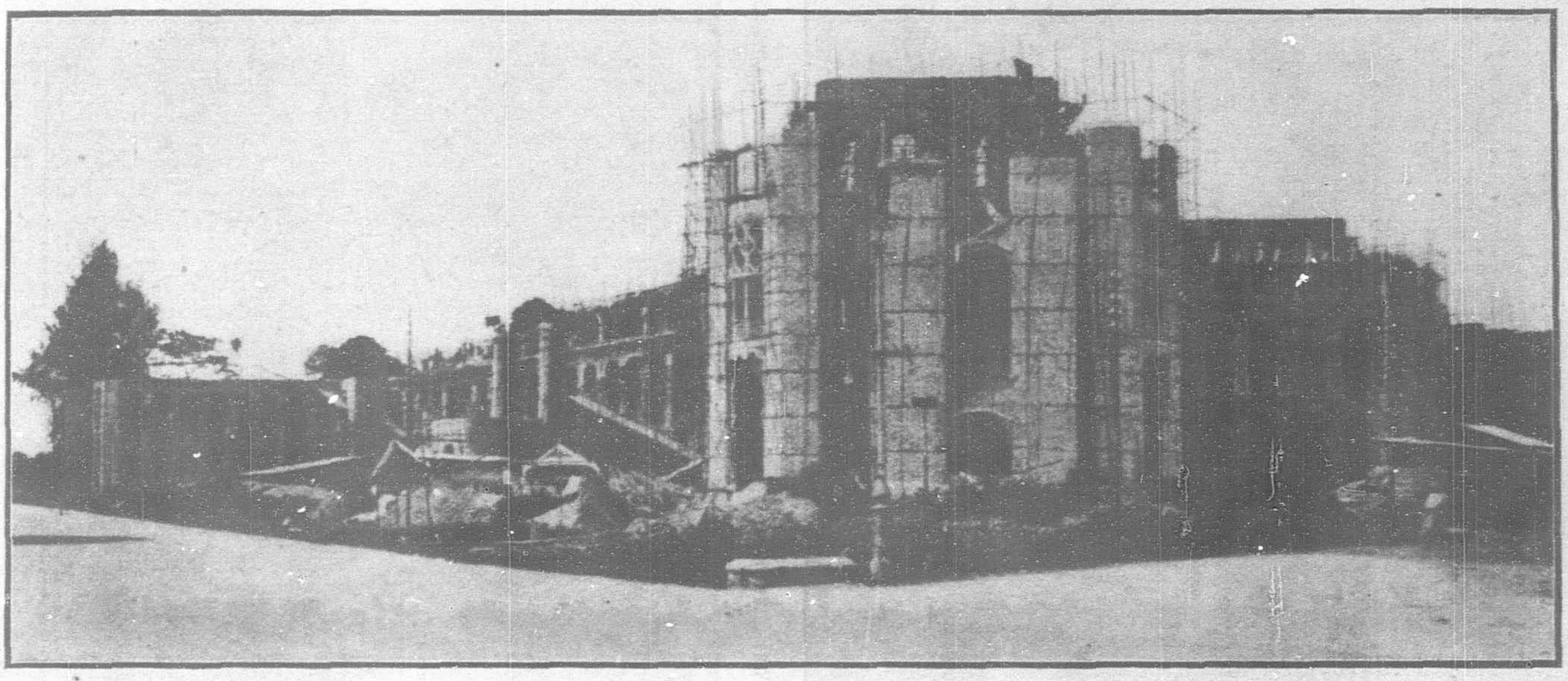
TWO WINGS OF THE CUSTOMS BUILDING, FRONTING ON BUND, WITH CLOCK TOWER. AT EXTREME LEFT IS HONGKONG AND SHANGHAI BANKING CORPORATION BUILDING



THE JARDINE MATHESON (EWO HONG) BUILDING—ONE OF THE OLDEST IN SHANGHAI

FEDERATED MALAY STATES RAILWAYS REPORT FOR THE YEAR 1915

[By G. H. Fox, Acting General Manager and Chief Engineer]



New Railway Administrative Offices in Course of Erection

The chief feature of the year's working of the railway has been the sharp recovery in traffic as a consequence of which the total earnings for the year are only $22,516.58 below 1914. This may be attributed to the following causes: The general feeling of security throughout the country resulting in steady trade; the demand and consequent good prices for tin and rubber and the diversion of a considerable amount of coastwise traffic to the railway; in connection with which I should like to emphasize the fact that the return of traffic between Singapore and the Peninsula across the Johore Straits has so increased, and is increasing at such a rate that in five or six years' time it can safely be predicted that any extension of the present ferry system will be insufficient to deal with the volume of goods required to be transported, and for this reason it will be necessary at an early date to commence the construction of a through line across the Straits.

It is worthy of special remark that the traffic earnings for the month of December, 1915, were the highest on record. While the falling off in receipts is very slight there has been a marked diminution in expenditure on revenue account, the reduction for the year being $629,727.29 or nearly 9 per cent. The gross receipts for the year are $9,051,243.17 and the gross expenditure $6,414,845.24, making net revenue $2,636,397.93, which is equivalent to, approximately, 3 per cent. on capital.

The total mileage of lines open for traffic on 31st December, 1915 (including Johore Leased Line), was 872 miles 26 chains, an increase of 49 miles 64 chains. The length of sidings was increased by 2 miles 77 chains, making a total of 118 miles 19 chains and a grand total of 990 miles 45 chains of railroad in operation. The railway system now comprises:

	M.	Ch.
Prai to Johore Boundary	351	15
Kedah Line—Bukit Mertajam Junction to Alor Star	56	18
Singapore Line	19	41
East Coast Line, Gemas to Tembeling	116	71
	543	65

The Branch Lines total 207 miles and the Leased Line of the Johore State Railway 120 making a Total of 872 miles and 26 chains.

The total number of stations open on 31st December, 1915, was 196 of which the Federated Malay States Railways had 178 and the Johore State Railway 18. In addition, 16 flag stations were open.

The capital account of the Open Lines amounted to $88,931,589.09 on 31st December, 1915:

Federated Malay States Railways	$88,315,105.63	
Leased Line—Johore State Railway (Federated Malay States expenditure only) ...	190,355.35	
	88,505,460.98	
Automobile service	426,128.11	
Total ...		$88,931,589.09

This total is an increase of $8,295,661.26 over the previous year, of which sum $5,777,706.21 represents the amount transferred from construction account in respect of new lines now open for traffic.

The principal Special Expenditure items are as follows:

Additional Locomotives and Rolling Stock	$739,423.40
New Station and Hotel, Ipoh ...	130,083.58
New Carriage Shop at Central Workshops	212,188.49
New Central Offices, Kuala Lumpur	168,577.53
New Wharf Accommodation, Port Swettenham	388,675.28
Purchase of Prai Dock and Wharves	534,123.00

The most notable item is the one relating to the purchase of Prai Docks. These—formerly the property of the Straits Settlement Government—were taken over by the Railway Department as from 1st July, 1914, at a valuation of $1,000,000. Of this sum, $534,123 was paid in 1915.

The average capital cost per mile of line open on 31st December, 1915, was $117,508.66 as compared with $114,043.21 at the end of 1914. These figures, as in past years, are calculated on the total capital expenditure, excluding the Johore Lines, but including the very large amounts expended in connection with such undertakings as docks, ferry services, etc. It is proposed to revise the figures from 1916 onwards.

Capital Account (Line Under Construction And Surveys)

The capital account of lines under construction and surveys on 31st December, 1915, stood at $10,078,315.68 as compared with $13,140,608.86 at the end of 1914, a decrease of $3,062,293.18.

The gross earnings from all sources (including the motor service) amounted to $9,051,243.17 as compared with $9,073,759.75 in 1914, a decrease of only $22,516.58. There is, however, a reduction in revenue from passengers (including season tickets and excess fares) of $185,821.40, but all other classes of traffic show increases; parcels and luggage $37,357.41, horses, carriages and dogs, $29,343.93, live stock $8,207.52. Miscellaneous earnings and sundry receipts together are up to $85,476.41, mainly due to the inclusion of the earnings of Prai Dock for 12 months as against 6 months in the last year. The increase on this account is $40,191.08. The item reimbursements show a decrease of $6,985.31.

In the comparison of the gross earnings of 1914 and 1915 the earning of the new lines and services opened must be considered. These are responsible for the following amounts:

Kedah Line	$108,254.93
Ampang, Batu Arang, etc. ...	43,763.06
Kelantan Line	37,373.51
Total ...	$189,391.50

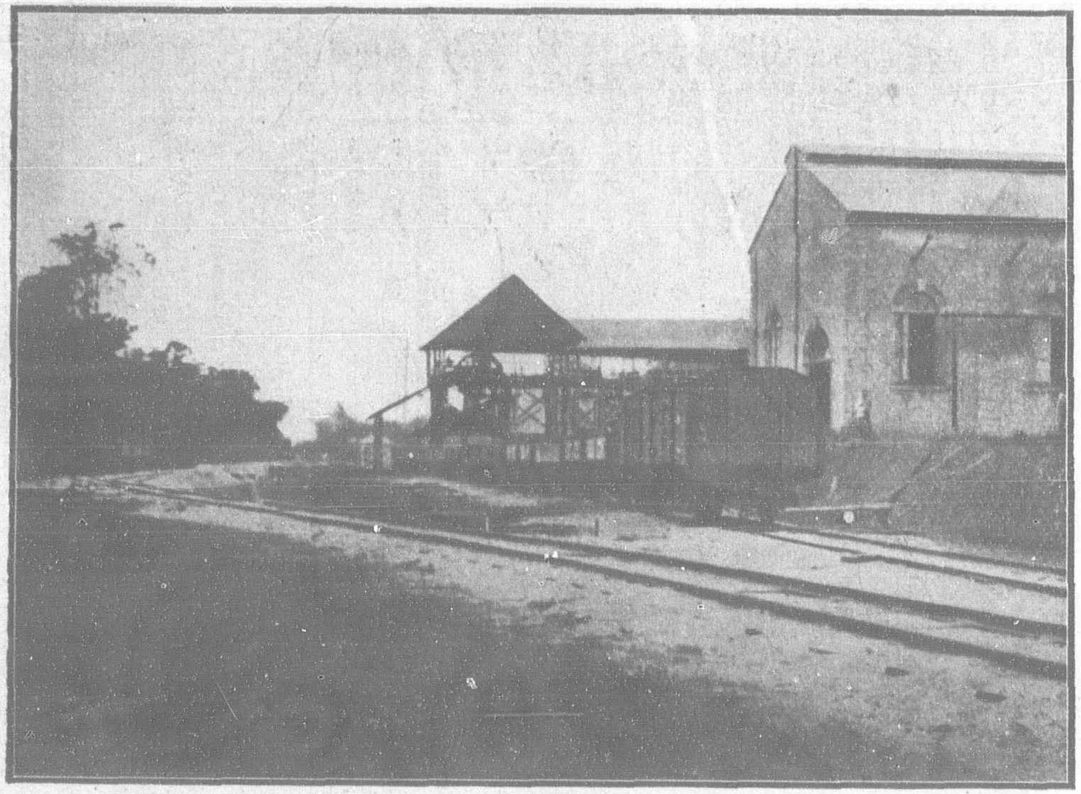
The estimated revenue for 1915 was $8,500,000, so that the actual earnings show an excess over estimate of $551,243.17.

Passengers

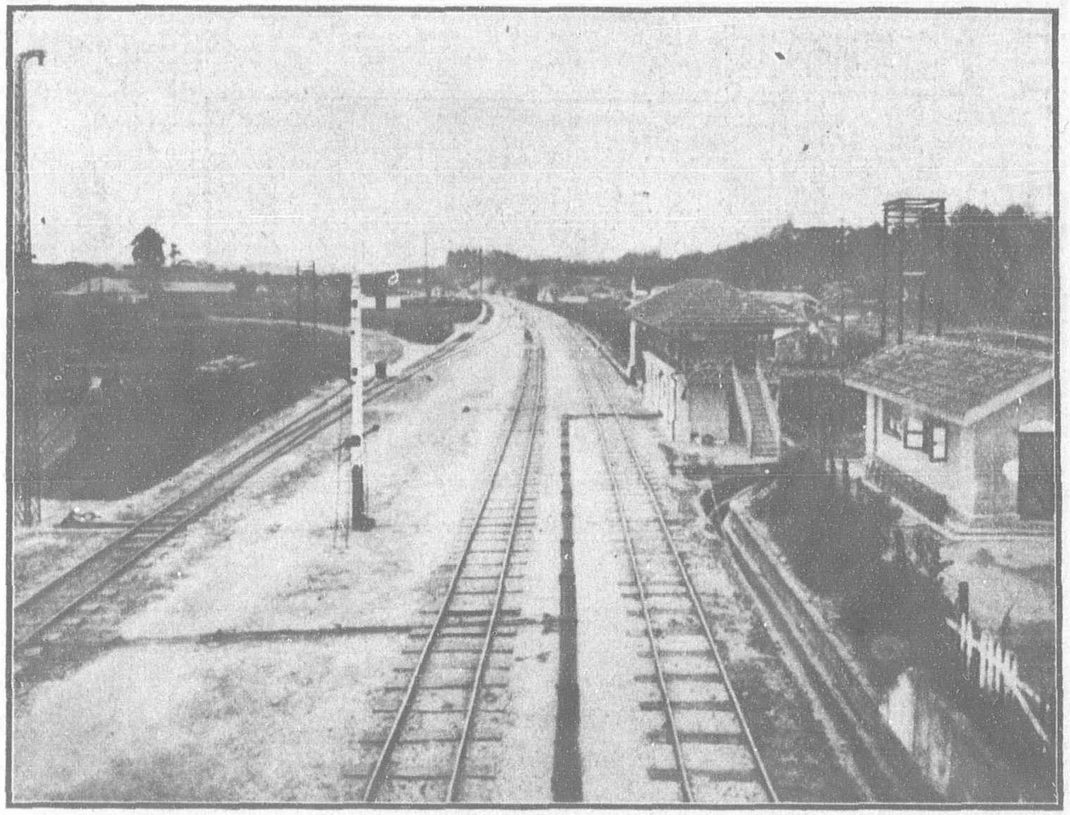
There is a decrease of 75,717 in the number of passengers carried in 1915 as compared with 1914.

The gross tonnage of goods carried in 1915 was 1,100,381 tons as compared with 1,140,253 tons in 1914, a decrease of 39,872 tons.

The earnings per mile of line open per week (excluding motor service) were $204.46 as compared with $217.70 in 1914. The gross

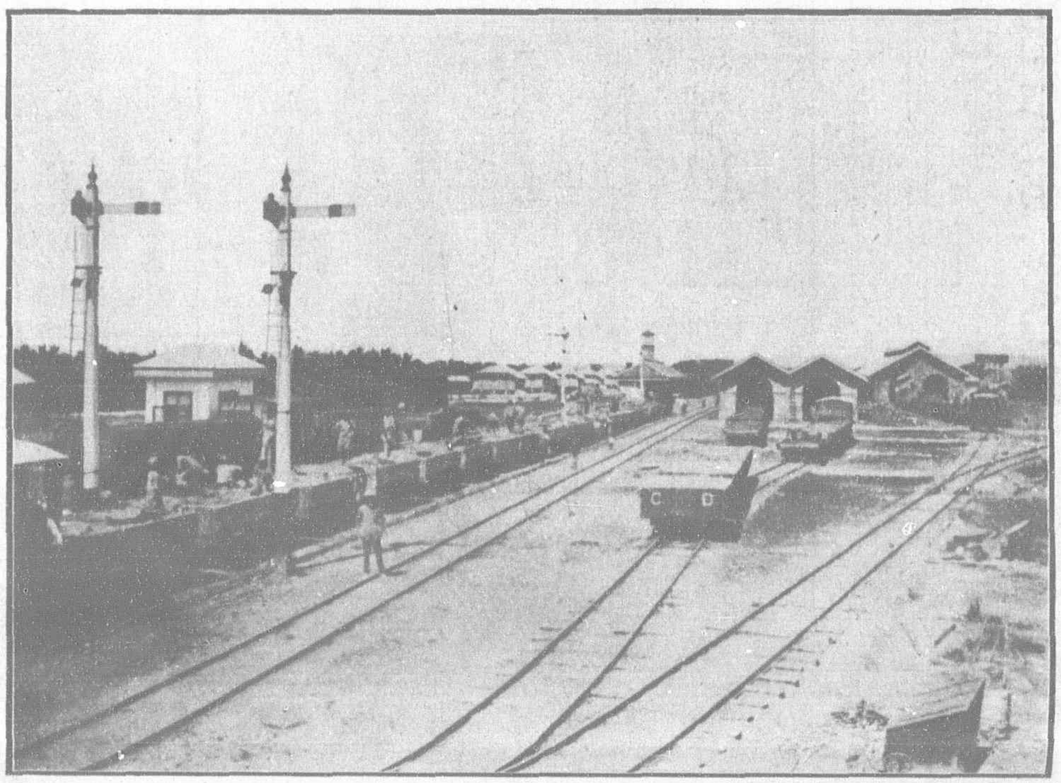


KUANG—BATING BERJUNTAI RAILWAY. MALAYAN COLLIERIES, BATU ARANG



DOUBLE LINE, PORT SWETTENHAM BRANCH, SHOWING NORTH APPROACH TO MARSHALLING YARD

KEDAH RAILWAY—ALOR STAR STATION DECORATIONS FOR OPENING CEREMONY, 4TH OCTOBER, 1915



KEDAH RAILWAY. ALOR STAR STATION YARD FROM SIGNAL CABIN

earnings per train mile were $2.81 as compared with $2.66 in 1914, and net earnings per train mile 82 cents as compared with 60 cents.

Working Expenses

The gross working expenses for the year, including motor service and special services on revenue account, amounted to $6,414,845.24 as compared with $7,044,572.53 in 1914, a decrease of $629,727.29. Of this decrease, $487,908.71 is in respect of special services. The proportion of working expenses to earnings works out at 70.79 per cent. as compared with 77.50 per cent. in 1914 and 71.36 per cent. in 1913.

The total railway expenditure per train mile is $1.99, which is applicable to the several departments as under:

	1915	1914
General Management	$ .10	$ .09
Traffic Department	44	.43
Locomotive Department... ...	.78	.82
Engineering ,, ...	.56	.61
Stores ,, ...	.02	.01
Telegraph ,, ...	.09	.10
Total	$1.99	$2.06

The total number of passengers carried during the year was 11,899,029 against 11,974,745 in 1914, a decrease in number of 75,717.

Comparison of coaching goods 1915 and 1914.

	1915	1914
Goods carried, in tons...	1,100,381	1,140,253
Passengers carried ...	11,899,028	11,974,745
Live stock (head) ...	104,822	91,806

The cost of maintenance per mile of line open per week of the Federated Malay State Railways was $31.15 as compared with $37.59 in 1914. The expenditure on slips and washaways was $23.751.41. The 872 miles 26 chains of permanent line together with the 118 miles 19 chains of loop line and sidings were maintained in good running order.

No new locomotives were added to the stock during the year but a new steam rail motor designed and built at Central Workshops was put in service on 1st October, 1915, when it started to work a shuttle service between Sultan Street and Ampany. The working has so far been satisfactory considering the difficulties incidental to a new type of engine, etc. This is the first of the nine steam rail motors now under construction.

One small tender engine, "E" class, belonging to Construction Department (originally purchased from Burma Railways, second-hand, during the year 1913, at a cost of $3,896.24) was sold to the Malayan Collieries, Limited, for the sum of $5,000.

One small open line tank engine, "A" class, was transferred to Construction Department in place of the "E" class engine sold to the Malayan Collieries. Two other locomotives of similar type were also transferred to the same department during the year.

The open line stock of locomotives, including the steam rail motor, was 170 on 31st December, 1915, as against 172 on 31st December, 1914. Sixty-two engines of all classes passed through the Central Workshops for heavy and light repairs during the year as compared with 59 during 1914. Of these 62, 60 were paid for by revenue and two by construction votes. The cost per engine against revenue was $5,015.45 as against $6,921.46 in 1914, and the cost per engine mile was 6.87 cents in 1915 against 6.54 cents in 1914. The total engine mileage including the maintenance ballast for the year 1915 was 4,377,944 compared with 4,653,895 in 1914, a decrease of 275,951 miles.

The average daily miles per engine taken on the 170 locomotives was 70.86 compared with 74.12 for 172 engines in 1914. The average daily mileage per engine actually at work was 102.70 against 104.76 in 1914.

The consumption of engine fuel was equivalent to 96,471 tons 11 cwts. 1 qr. 21 lbs. of coal. Bakau firewood being included at ratio of 2½ to 1 and the cost per engine miles was 18.12 cents as against 20.18 cents in 1914, the figures per train mile being 24.80 and 21.77 cents, respectively.

THE RAILWAYS OF CHOSEN (KOREA)

[Annual Report for Fiscal Year Ending March, 1915]

The average working mileage of the Chosen Railways for the year 1914-15 in passenger traffic was 985.1, and that in goods traffic 986.2, showing increases of 75.1 in each over the preceding year. The train mileage totalled 3,461,716 miles, the number of passengers carried 4,768,251, and the tonnage of freight hauled 1,386,614 tons, showing decreases of 108,650 miles in train mileage, 227,190 in passengers, and 2,301 tons in freight, compared with the figures for the preceding year. The aggregate passenger and freight mileages were 166,791,661 and 139,797,759 respectively, being a decrease of 6,951,827 in the former and an increase of 16,370,086 in the latter when compared with the figures for the preceding year. The traffic receipts for the year were *Yen* 3,660,814 from passengers and *Yen* 2,756,666 from freight, making a total of *Yen* 6,417,480 and showing an increase of *Yen* 67,632.

The national mourning into which we were plunged in the beginning of the fiscal year caused the people in general to refrain from making pleasure trips, and the traffic in summer, too, was rendered dull in consequence of the war in Europe and of floods. In goods traffic, though, we suffered to a certain extent from the low financial condition in general. The quantity of freight conveyed over longer distances increased as the result of the opening of the Kei-Gen line. The transportation of coal was brisk in consequence of the war, and transportation of rice and other grains, too, became livelier after the end of 1914. The increase in goods of large consignment mentioned above was really responsible for the prosperous condition of the goods traffic during the year.

New Traffic Arrangements

The principal traffic arrangements made during the year were as follows. In consequence of the revision in the time-tables of the Chinese Eastern Railway ours were also revised in May. In October, joint transportation of passengers and goods was opened with the Kyodo Kisen Kaisha (Union S.S. Co.) of Awa province, Japan, and joint transportation of passengers and luggage was added to that of goods with the Chosen Yusen Kaisha (Chosen M. S. S. Co.). In November, the Japan-Manchuria-Russia through passenger traffic was put into force, and in the same month joint transportation of passengers and goods was started between Zenshu station on the Zenhoku Light Rly. and Kunsan Station on our line. In January, 1915, the Peking-Kalgan, Peking-Hankow, Tientsin-Pukow, and Shanghai-Nanking Lines were added to the Peking-Mukden Line in the Japan-China passenger through traffic. In March, through the agency of the South Manchuria Ry. Co., goods traffic was opened between Kirin Station on the Kirin-Changchun Line and the principal stations on our lines.

The Chosen Hotel in Hasegawacho, Keijyo, was completed and opened in October. This fire proof building of five storys has sixty-nine rooms and can accommodate 120 guests. The dining room can seat three hundred guests. The returns for our business at the above hotel and at the Fusan and Shingishu Station Hotels show that 1,237 guests stopped at the hotels, making 2,596 in the aggregate, 10,923 meals were served, 4,744 guests attended banquets, and the hotel receipts were Yen 49,750, this rather dull showing having been brought about by the decrease in the number of through passengers from Europe. The results from the dining-cars and the refreshment-room at Nandaimon Station were not very encouraging, either, on account of a decrease in the travelling public in general. The results for the year were 34,223 guests and yen 34,608 in receipts, being decreases of 9,056 in number of guests and Yen 6,695 in receipts.

In the warehouse business, we can point to an increase in the number of warehouses by three, one each at Mokuho and other two places, making sixteen in all. The tonnage of goods deposited was 18,303 and of goods delivered 15,048 tons, showing increases of 8,664 in the former and 7,166 in the latter over the preceding year. The receipts from the business were yen 7,268, being an increase of Yen 2.489 over the year previous. The principal goods deposited were grain, amounting to about 90 per cent. of the total, straw ropes, straw bags, straw mats, linen, cotton fabrics, and dried fish. As th financial condition in general was rather bad many persons availed themselves of our warehouses, resulting in the fine expansion we enjoyed in this department.

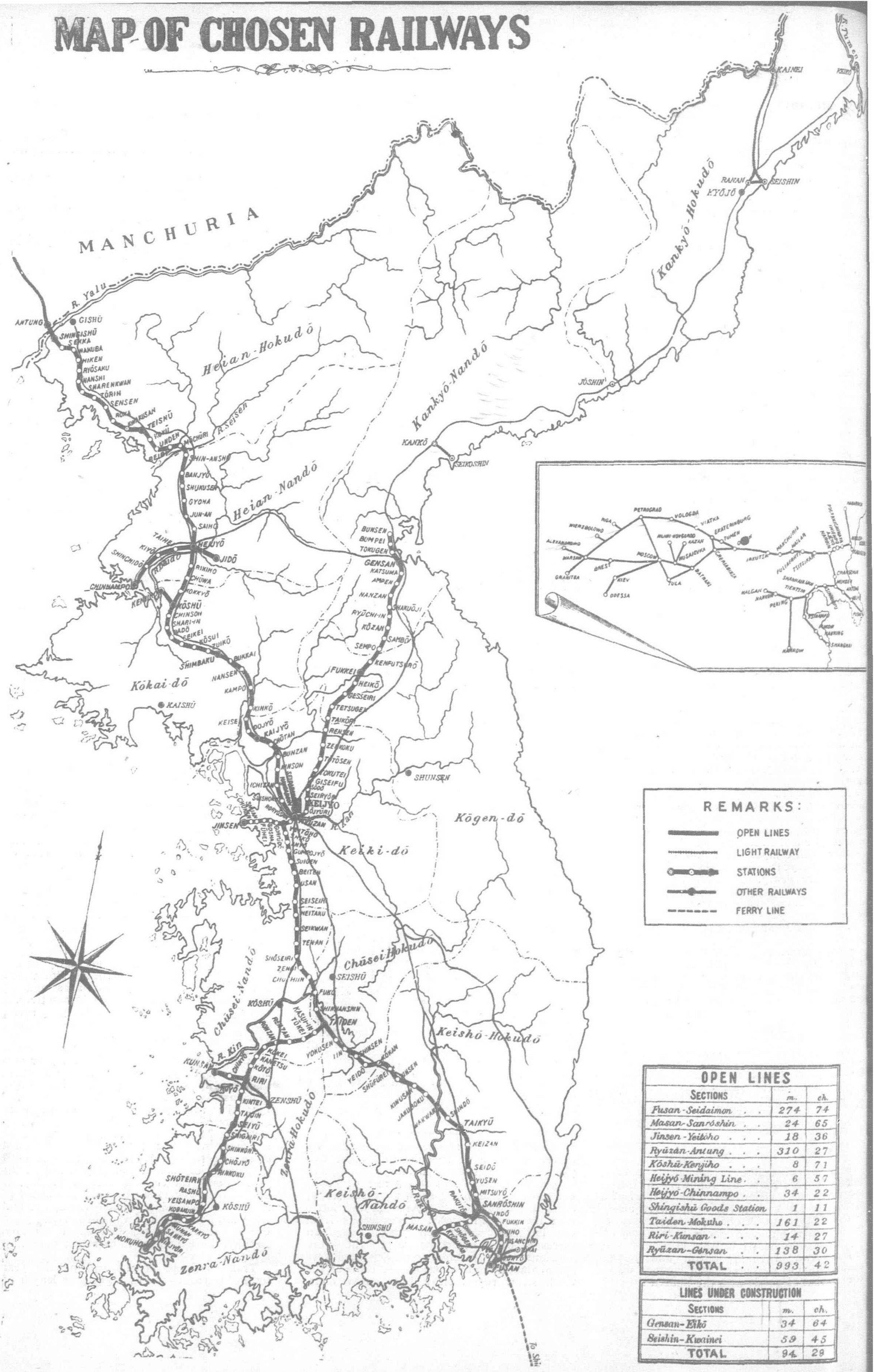
Locomotive Mileage

In the results of locomotive working, the mileage during the year totalled 4,372,637 miles and the converted carriage and wagon mileage 29,109,701; coal consumed amounted to 202,986,758 kin for running, and 23,431,518 kin for lighting and other purposes, making 226,418,276 kin in all; oil consumed reached 91,082 sho for locomotive working, and 77,193 sho for carriages, wagons, etc., or 168,275 sho in all. Compared with the figures for the preceding year, these show increases of 212,518 in locomotive mileage, 1,045,392 in carriage and wagon mileage, 22,653,561 kin in coal consumed, and a decrease of 6,160 sho in oil. Rolling stock returns show 165 locomotives, 335 carriages, and 1,602 wagons, being increases of 11 locomotives, 67 carriages, and 64 wagons. The principal items of equipment and improvement made in rolling stock, etc., were the building of 37 carriages and 64 wagons, and the erection of 11 locomotives, 4 carriages, and 136 spans of bridge girders, besides improvements made to 16 locomotives, 36 carriages, and 185 wagons.

The aggregate length of electrical communication lines at the end of the year was 2,791 ri; telegraphic apparatus installed numbered 149, telephonic 964, and blocks 279. Stations dealing with telegrams numbered 150; the railway messages handled were 4,180,090 and public messages 228,107, making 4,408,197 in all. The revenue from public messages was Yen 7,294. The withdrawal of the generating station at Shingishu reduced the number of such stations at the end of the year to one; the engines were of 800 h.p. in all and their generating capacity amounted to 448 kw. Electric lamps numbered 27 arc and 7,437 incandescent, 4 of the former and 3,416 of the latter being supplied under contract. Besides, those installed in carriages numbered 2,627.

Traffic mileage at the end of the year totalled 994 miles and the aggregate length of

MAP OF CHOSEN RAILWAYS



REMARKS:

- OPEN LINES
- LIGHT RAILWAY
- STATIONS
- OTHER RAILWAYS
- FERRY LINE

OPEN LINES

SECTIONS	m.	ch.
Fusan-Seidaimon . .	274	74
Masan-Sanrōshin . .	24	65
Jinsen-Yeitōho . . .	18	36
Ryūzan-Antung . . .	310	27
Kōshū-Kenjiho . . .	8	71
Heijyō-Mining Line . .	6	57
Heijyō-Chinnampo . .	34	22
Shingishū Goods Station	1	11
Taiden-Mokuho . . .	161	22
Riri-Kunsan	14	27
Ryūzan-Gensan . .	138	30
TOTAL . .	993	42

LINES UNDER CONSTRUCTION

SECTIONS	m.	ch.
Gensan-Eikō	34	64
Seishin-Kwainei	59	45
TOTAL	94	29

track 1,232 m. 54 ch., being increases of 23.8 m. in the former and 40 m. 41 ch. in the latter over the preceding year. The number of stations was 158, being greater by 4 than in the previous year.

Repairs to Tunnel

Maintenance works included repairs to Chuwa tunnel, repainting of bridges and culverts on Fuko-Yeitoho section, as well as of bridges over the Rakutoko and Ryushinko, besides repairs to tracks, renewal of sleepers, gravelling, and works essential to the maintenance of stations and other buildings. Additional works were, construction of refuge lines at Wakan, Kinusan, and Kinsen Stations, alteration of tracks in Soryo and Fusanchin station yards, earthworks necessitated by alteration of tracks in Jido station-yard on the Heyjio Mining line, improvement of track on the Kenjiho branch, and other arrangements concerning tracks, station buildings, and telegraphic lines. As regards extraordinary repairs, we may say that protracted rains came on after June, and the rivers throughout the country overflowed and damaged all our lines; especially near Kaijyo on the Kei-Gi line and Gesseiri on the Kei-Gen line, and we had to suspend traffic for a time. We started the repair works at once and all were finished without unnecessary delay.

For the improvement of the Kei-Fu line which was planned to be completed in five years from the fiscal year of 1914, we took up the reconstruction of the Taiden-Fuko and Jakuboku-Kinsen sections as this was most urgently required. At the same time electric lines, official houses, and other buildings were newly erected, removed or rebuilt.

Regarding construction works the following may be mentioned; on the Kei-Gen line the construction of 7.6 miles of Kenfutsuro-Sempo section, which had been in the course of construction since the previous year, was completed in June, and that of 16.2 miles of Sempo-Kōzan section was finished in August; thus the whole line, 138.4 miles in length, was opened to traffic. The remaining work in station arrangements, earthworks, and buildings is in progress. As for Gensan-Yeiko section (34.8 m.) and Seishin-Kainei section (59.6 m.) which form the first part of our projected Kankyo line, we started work on the Gensan-Yeiko section, but no conspicuous progress was made as the work was hindered by frost. The Chosen Hotel, Keijyo, which was still in the course of construction, and all of its outhouses were completed in September.

Traffic Receipts

The traffic receipts for the year amounted to Yen 7,734,260 and expenditure to Yen 6,501,931, leaving a balance of Yen 1,232,329 as profit. Compared with the figures for the preceding year, the decrease in receipts was Yen 117,925, the increase in expenditure Yen 217,973; so the decrease in profit was Yen 335,898.

In the railway store account, the total profit amounted to Yen 5,736,484 and the total loss to Yen 5,736,427, leaving a balance of Yen 57.

The value of contracts in the purchase of railway stores amounted to Yen 4,663,838, being an increase of Yen 37,124 compared with the previous year.

The capital invested in the railways since the commencement of their construction up to the end of the previous year totalled Yen 123,382,034. Adding to this the sum of Yen 7,634,117 invested during the year, the total capital at the end of the year under review reaches Yen 131,016,151.

Light Railways

Light railways and tramways in Chosen in operation at the end of the year were six, namely, one electric tramway of 16.2 miles in Keijyo, a light railway of 5.8 miles between Fusanchin and Torai, a light railway of 15.5 miles between Riri and Zenshu, a manual tramway of 1.2 miles in Heijyo, a manual tramway of 0.7 miles between Wakan Station and the wharf on the Rakuto, and a manual tramway of 5.1 miles between Kankyo and Ranan, amounting in all to 44.5 miles. The aggregate capital of these light railways and tramways totalled Yen 2,799,474. The mileage still to be opened amounts to 173.2 miles, namely, 7 miles in Fusan, 115.2 miles between Torai and Keishu, Taikyu and Keishu, Keishu and Hoko, and Urusan and Choseiho, 13.4 miles between Shinshu and Senshin, 8.4 miles between Koshu and Shoteiri, 8.2 miles between Kintei and the wharf on the Toshin, 8.9 miles between Kanko and Seikoshin, and 12.1 miles between Seishin and Ranan.

Results of Traffic

The average working mileage was 985.1 miles in passenger traffic and 986.2 in that of goods. Train mileage amounted to 3,461,716 miles, that of carriages to 11,182,059 miles, and that of wagons to 17,549,427 miles. The number of passengers carried was 4,768,251, while the passenger mileage reached 166,791,661 miles. The tonnage of goods amounted to 1,386,614 tons, and the ton mileage to 139,797,759 miles. Receipts from passengers amounted to Yen 3,660,814 and from goods to Yen 2,756,666, making a total of Yen 6,417,480.

The above show increases of 75.1 miles both in passenger and goods traffic in consequence of the completion of the Kei-Gen and Konan lines, and decreases of 3 per cent. in train mileage, 0.4 per cent. in carriage mileage, 7.3 per cent. in wagon mileage, 4.5 per cent. in the number of passengers, 4 per cent. in passenger mileage and 0.2 per cent. in tonnage of goods, with an increase of 13.3 per cent in ton mileage. In traffic receipts, there was a decrease of 4.1 per cent. from passengers and an increase of 8.8 per cent. from goods, being an increase of 1.1 per cent. in the total.

The results from passenger traffic during the year showed an average of 464 passengers and Yen 10.18 per day per mile, being a decrease of 59 in passengers and of Yen 1.31 in receipts, as compared with the figures for the preceding year.

As regards the goods traffic, the quantity of through goods increased consequent upon the opening of the Kei-Gen line; the transportation of coal and cattle, too, was brisk, while the transit trade of rice and beans, and the transportation of ore, cotton fabrics, and cotton yarns destined for Manchuria increased greatly toward the end of January. All this conduced to bring about our fine results notwithstanding the monetary depression that prevailed.

Of the 207,000 tons of goods transported the points of destination were Fusan (66,000 tons), Keijyo and Kunsan (35,000 tons), Jinsen (20,000 tons) and Mokuho (6,000 tons). Goods despatched, too, reached 55,000 tons in all, 40 per cent. of the total being for Japan. The transportation of coal was greater, especially after September, on account of the war, and reached 232,000 tons, showing an increase of 63,000 tons over the previous year, 30 per cent. of the coal transported coming from Fushun. As regards wood there was a great demand due to activity in building, and about 70,000 tons was transported, the greater part of it coming from Shingishu.

Salt Traffic Increased

As for salt, the total quantity transported reached 42,000 tons in consequence of the growth in the refining business carried on by the Government and private firms, resulting in greater production. Principal points from which salt was transported were Jinsen (18,000 tons), Chinnampo 6,000 tons) and Shuan and Fusan (4,000 tons each). The transportation of Mintai-fish increased to 13,000 tons in consequence of the opening of the Kei-Gen line. One half of the above quantity came from Gensan; that from Fusan and Soryo amounting to only 5,000 tons each, showing a decrease of 4,000 tons as compared with the preceding year, due to change in route consequent on the opening of the Kei-Gen line.

In the transportation of ores we saw an increase of 18,000 tons as compared with the previous year, on account of more than 10,000 tons being depatched from Chinnampo to Honkeiko (South Manchuria).

The transportation of straw ropes, straw bags, and straw mats reached 13,000 tons, owing to the brisker movement of rice and beans. The quantity of cotton fabrics and cotton yarns destined for Manchuria was very great, being 15,000 tons of the former and 7,000 tons of the latter and showing increases of 53 per cent. and 117 per cent. respectively over the previous year. The transportation of cattle and hides, up to this time quite insignificant, grew conspicuously owing to the war and reached 1,000 tons for the former and 5,000 tons for the latter. But that of graphite was but 5,000 tons, being only 46 per cent. of that for the previous year; fire-wood and charcoal, on account of the weather, and millet, owing to a decrease in importation, made a poor show in the quantity transported.

In the conditions above mentioned, the average tonnage per day per mile was 388 tons and receipts Yen 7.66, being an increase of 17 in tonnage and 4 sen in receipts, compared with the preceding year. The decrease of 8 mo in average receipts per ton per mile, showing 1.83 sen, and increases of 11.9 miles in average mileage per ton and of 14 sen in receipts per ton, showing 100.8 m. in the former and Yen 1.84 in the latter, are due to the greater quantity of goods transported over long distances.

Dining-Cars and Refreshment-Rooms

The guests in dining-cars during the year numbered 23,283, and the receipts, Yen 25,906. These figures show decreases of 30 per cent. in the former and 18 per cent. in the latter compared with the preceding year. The refreshment-room at Nandaimon Station had 10,940 guests and the receipts from them reached Yen 8,702, showing an increase of 9.1 per cent. in the former and a decrease of 10.4 per cent. in the latter when compared with the previous year. The reason for these disappointing results was the decrease witnessed in general passengers.

The warehouses at the end of the year numbered 16; the goods deposited reached 18,303 tons and those delivered 15,048 tons, showing an average of 1,966 tons handled per day. The total receipts amounted to Yen 7,268. Of the goods deposited 90 per cent. was grain, the rest being made up of straw ropes, straw bags, straw mats, linen, cotton fabrics, dried fish, etc. When compared with the figures for the preceding year, these show increases of 3 warehouses (Mokuho, Riri, and Gensan), 89.9 per cent. in goods deposited, 90.9 per cent. in goods delivered, and 52.1 per cent. in receipts. The financial depression prevailing in general throughout the year induced traders to take advantage of the warehouses in order to facilitate the monetary circulation, and it is to that we owe the fine results attained in this line. The dock warrants we issued were for 57.5 per cent of all the items of goods deposited, and the total sum of money lent on the goods by bankers was 58 per cent. of the total value of the goods deposited.

Results of Locomotive Working

The mileage of locomotives during the year was 4,372,637.2 miles and the converted mileage of cars 29,109,701.2 miles, while the coal consumed for running amounted to 202,986,758 kin and oil (for cylinders, machines, and air pumps) to 91,082 sho. These show increase of 5.1 per cent. in locomotive mileage, 3.7 per cent. in car mileage, 9.3 per cent. in coal and 0.9 per cent. in oil over the previous year.

Workshops

Workshops at the end of the year numbered three, namely, Soryo, Ryuzan, and Peijyo;

the number of artisans and workmen at the end of the year was 1,574 and their aggregate working days reached 511,207, while the total amount of wages was Yen 307,143. The average number of artisans and workmen employed per day was 1,563, their wages amounting to Yen 1.156.40, the average wage per day per man being Yen 0.74.

Principal items of building and repair were the building of six 1st and 2nd class composite carriages, seven 2nd and 3rd class composite carriages, eighteen 3rd class carriages, four baggage and mail composite brake vans, two baggage and brake vans, forty covered wagons, and twenty-four open wagons, and the repairing of 154 locomotives (including 10 of a trifling nature and 2 belonging to a private company), 620 carriages (including 4 belonging to a private company) and 1,220 wagons. Erection work comprised 11 locomotives newly bought, two 1st class and dining-room composite carriages, two 1st and 2nd class composite carriages, and 136 spans of bridge girders.

Workshops Improvements

At Sory Workshops, besides the completion of a polishing machine for finishing metallic articles for carriages, the wooden part of a 25 tons goliath crane was renewed as it had decayed. The steam engine in use for motors was to be removed and the erection of a marine boiler in place of the old one is now underway. One still for batteries for electric lights in carriages is also being set up. The motive power in use at the end of the year was supplied by four sets of steam-engines (170 h.p.).

At Ryuzan Workshops the fixing up of a jib crane was finished, and the building of new blacksmith and boiler shops, as well as the enlarging of the erecting and lathe shops is in progress. The motive power at the end of the year was supplied by 2 sets of dynamos of 224. kw. (one kept for reserve), one set of dynamos of 1 kw., 14 sets of motors (574 h. p. in all) and 2 sets of air compressors of 106 h. p. (one kept for emergency).

At Heijyo Branch Workshops one screw cutting machine and one fan motor were newly set up; the motive power at the end of the year was supplied by a steam-engine of 150 h. p.

Electrical Arrangement

The following are the principal items to be mentioned concerning the electrical arrangements and their results during the year.

Power station: the power station at Shingishu Station was removed on July 31, 1914, so the one in Ryuzan Workshops was the only one we had at the end of the year. The number of steam engines was 2 (800 in total h. p.) and of generators 2 (448 kw. in capacity) 1 steam engine and 1 generator being kept in reserve. These show decreases of 1 in power stations, 1 in steam engines (30 in h.p.), and 1 in generators (18 kw.), compared with the preceding year.

Motors: The motors at Ryuzan Workshops numbered 14 and their total h.p. amounted to 574, being less by 1 in the former and 75 in the latter than in the previous year.

Electric Lighting Increases

Electric Lights: The electric lights supplied by the Railway Bureau's own power station numbered 4,044, representing 3,435 when converted into 16 c.p., and those under contract 3,420, representing 3,882 when converted into 16 c.p.; these show increases of 17.9 per cent. in the former and 20.7 per cent. in the latter over the preceding year.

172 carriages were equipped with 2,627 electric lights and 219 motor fans, their motors being 85 and batteries 2,040 in number respectively. These when compared with the preceding year show increases of 32.3 per cent. in the number of carriages, 46.4 per cent. in that of lights, 68.5 per cent. in that of fans, and 44.1 per cent. each in motors and batteries. The expenditure for the above arrangements was Yen 10,456, being an average of Yen 60.791 per carriage.

Results of Generators: The total amount of current generated during the year reached 1,059,679 kw. h. (2,903 kw. h. per day), while the total expenditure was Yen 27,473.88 and the coal consumed 4,470,519 kin, corresponding to 2.6 sen in expenditure and 4.2 kin of coal consumed per kw. h. The expenditure consisted of 63 per cent. for fuel, 5 per cent. for oil and grease, 13 per cent. for repairs and 19 per cent. for other items. The average cost of coal per 10,000 kin was Yen 38.47. These figures show decreases of 10.5 per cent. in current generated, 14.3 per cent. in coal consumed, 6.3 per cent. in expenditure, and 4.5 per cent. in the average amount of coal consumed per kw. h., with increases of 4 per cent. in average expenditure per kw. h. and Yen 5.16 in average cost of coal.

Construction and Improvements

Kankyo Line.—The Kankyo line consists of a trunk line, 373.7 miles, from Gensan in Kankyo-nando to Kainei in Kankyo-hokudo and a branch line, 5.3 miles, from Yujyo to Seishin in Kankyo-hokudo, totalling 379 miles. But our plan at present only takes up the construction of 34.8 miles between Gensan and Yeiko, and of 59.6 miles between Seishin and Kainei. As we are going to construct these as hurriedly as possible, the long bridges on the line will be only temporary ones, and the section from a point 29 m. 30 ch. 3.8 l. to a point 34 m. 28 ch. 43.8 l. from Seishin will be a temporary line. Surveying was taken up in April, 1914; that on the Gensan-Yeiko section was finished in June, and that on Seishin-Zenkyori section in July. The construction work was commenced in October, but we could not make any particular progress in the work as the freezing season set in soon after.

New Works Finished

Konan Line.—As regards the reconstruction work of this line. 20.6 miles between Taiden and Koseki on Taiden-Renzan section, and 6.5 miles between Yeisen and Kobakuin on Kakkyo-Kabakuin section were finished; that of 24.7 miles between R. Ako and Riri on Renzan-Riri section and of 1.3 miles on the approach to Sankyo River Bridge and at 2 other places on Rashu-Mokuho section are now in progress and will be finished next year.

Kei-Gen Line.—The different works on Kenfutsuro-Sempo section (7.6 miles), continued from the previous year, were finished in June and traffic on the section was opened. In August those on Sempo-Kozan section (16.2 miles) were finished and the whole line was opened to traffic. But different arrangements at stations as well as earth and building works were still under way and the following is some of the work done during the year: 60 lb. rails on Ryuzan-Giseifu section and in Totosen Station compound were changed to 75 lb. rails. Sidings were added to Fukkei and Seihyoko Stations and more gravel was spread on Kenfutsuro-Sempo and Tetsugen-Kenfutsuro sections. On Ryuzan-Zenkoku section, Seihyoko Station was newly built and Ojyuri Station was enlarged. The formation level of parts 5 m., 14 m. 50 ch., 17 m., and 18 m. 70 ch. from Ryuzan was raised. Flood openings for the R. Seiryu (17 m. from Ryuzan) and seven open and covered culverts were newly built, and repairs made to damaged cuttings.

New Bridges make Progress

New bridges over the Inri and other rivers, reforming of cuttings, and filling in of broken stone on embankments on Zenkoku-Heiko section, reforming of and filling in of broken stone in cuttings on Kenfutsuro-Sempo section, and improvements in the road-bed and the spreading of gravel on Kozan-Nanzan section, and the spreading of gravel on goods lines at Gensan Statio., are now in progress.

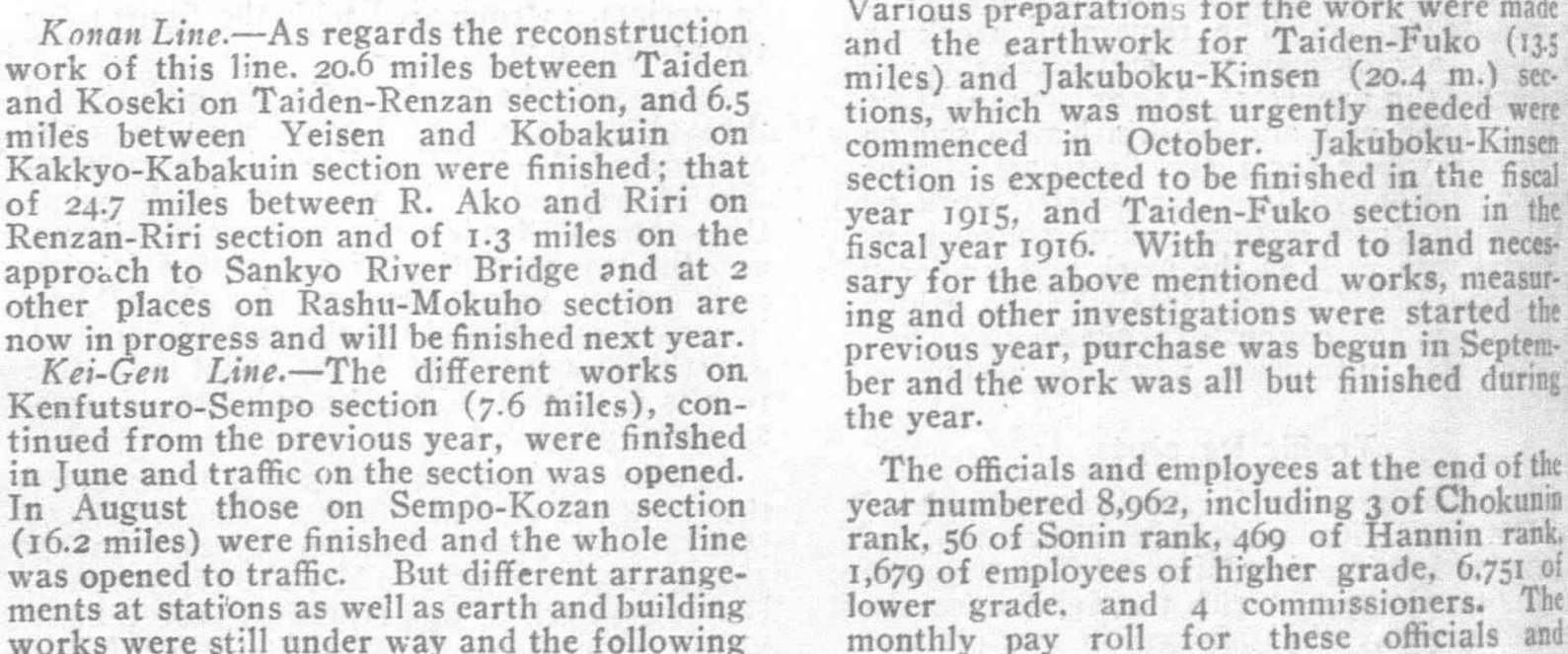
Kei-Gi Line.—The extension of Mochuri Station and the improvement of the track adjacent to the station continued from the previous year, were finished and the different arrangements demanded at the station on account of these works were all completed; the reconstruction of Hakusen branch was also finished.

As regards the Hei-Nan Line, alteration of a grade of a part of the track between Heijyo and Taihei, and Kiyo and Shinchido, erection of steel girders over the flood openings for the R. Futsu No. 3, were furnished and enlarging of various stations will be taken up next fiscal year.

Survey of New Lines

As regards the improvement work, on the Kei-Fu line the survey for tracks between Taikyu and Fuko, Jakuboku and Fuko, and near Keijyo and Soryo was finished in June: Various preparations for the work were made and the earthwork for Taiden-Fuko (13.5 miles) and Jakuboku-Kinsen (20.4 m.) sections, which was most urgently needed were commenced in October. Jakuboku-Kinsen section is expected to be finished in the fiscal year 1915, and Taiden-Fuko section in the fiscal year 1916. With regard to land necessary for the above mentioned works, measuring and other investigations were started the previous year, purchase was begun in September and the work was all but finished during the year.

The officials and employees at the end of the year numbered 8,962, including 3 of Chokunin rank, 56 of Sonin rank, 469 of Hannin rank, 1,679 of employees of higher grade, 6,751 of lower grade, and 4 commissioners. The monthly pay roll for these officials and employees amounted to Yen 230,851.



BUREAU OF COMMUNICATIONS OF THE CHOSEN GOVERNMENT

RAILWAY PROGRESS IN CHINA IN 1915

[From Maritime Customs Reports, 1916]

Although the financial stringency incident upon the European war compelled most of the railway projects in China to mark time, some substantial progress was made in several of the new lines and all are prepared for the resumption of construction work as soon as funds are available. The Commissioners of Customs of the Yangtse valley districts have furnished the following information in their 1915 reports which have recently been made public:

Hankow-Szechuen Line

From Ichang the Commissioner reports that international financial stringency, due to the continued war in Europe, brought active work in connexion with the Ch'uan-Han Railway to a standstill in September, when all the foreign engineering staff except the chief were dispensed with, and the latter retained for custody of property pending the return of favourable conditions. But it is believed that very sound investigations were made, and these were reported in detail with photographic illustrations to the authorities concerned.

All preliminary surveys of the Ichang-Kweichowfu section were completed and the final location carried to a point 35 miles west of Ichang in the early spring. The length of the proposed Nanto tunnel was reduced to 17,475 feet. Its eastern portal is to be situated 13 miles west of Ichang and is to be reached via the San-Yu-tung Glen at a point 7 miles from the left bank of the Yangtze. The western portal is to be 19 miles from Ichang by river, about 600 feet from the left bank, near the village of Nanto. It is estimated that this tunnel, the largest yet projected in China, could be constructed in four years.

The interval between Kweichowfu and Siaokiang was linked by a preliminary survey, and the final survey of the I-K'uei section finished in the June quarter. A traffic report is said to be in preparation, which should demonstrate the commercial soundness of the scheme, as its technical practicability has already been demonstrated. To this a civilian may venture to add that such a railway would seem to be of at least equal strategic importance to the Central Government, rendering Szechwan and Yunnan accessible to the movement of troops from the north-east, at present dependent upon a dangerous and undeveloped waterway not available for steam transport during the winter season.

From Changsha it is reported that work on the Changsha-Yochow-Hankow Railway line, which is to form a section of the Canton-Hankow line, has progressed favourably. Earthwork is completed for about 66 miles north of Changsha and is also completely through to Yochow with the exception of some small gaps. The culverts and masonry work of the small bridges have nearly all been completed, and the steelwork is being erected. The foundations of the piers of the major bridges are all in hand, many of them being already completed, and all the masonry work of the large bridges will be finished by the end of 1916.

Owing to the European war, the date of delivery of the steel work for the large bridges is somewhat doubtful, but it is expected that it will arrive during 1916 before the river is too low to prevent boats from reaching the bridge sites. All culverts and bridges have been constructed in cement concrete, and the piers of the larger bridges have in some cases been sunk on caissons or well curbs by opening dredging, in others by means of compressed air, and all piers of the large bridges are being carried down to rock at various depths below the river beds.

As there are no tunnels between this place and Yochow, earthwork is not heavy, except between the Hsinch'iang and Milo Rivers, and in the neighbourhood of Changsha. There are two big crossings at the Hsinch'iang Rivers about 500 and 600 feet each, one at the Milo.

The distance from Yochow station to the Changsha terminus is 85½ miles, being nearly a direct route. Stations are likely to be of a temporary or semi-permanent nature, owing to the necessity for strict economy of funds. None of the places at present touched between the two ports is of any great importance, the market town of Hwangshakai (黃沙街) being the largest, but considerable traffic may be expected at the Milo from the direction of Pingkiang (平江).

The Nanking-Changsha line (寧湘) has been surveyed through, parties of engineers having arrived at the port twice during the year, early in March and again in December. Two routes would appear to be under contemplation, one of which provides for the use of the Changsha-Chuchow (長株) railway line, which itself is a section of the Canton-Hankow line, as a portion of the projected line, while another scheme suggests the laying of a direct route from Nanchang, in Kiangsi Province, to Changsha, the latter route being considered more suitable. As the loan agreements in connexion with this contemplated railway line had to be postponed on account of the outbreak of hostilities in Europe, no decision has as yet been made in this respect.

Yochow's Customs Commissioner reports that during the year all embankments and cuttings on the Canton-Hankow Railway have been finished for about 60 miles from Wuchang and all bridges and culverts completed for about 50 miles. A large proportion of the remaining earthwork is finished as far as Changsha, and the bridges and culverts are in hand. About 25 miles of rails have been laid from Wuchang southwards, but no public trains are yet running.

The Commissioner at Hankow makes public the following report of Mr. A. G. Cox, engineer-in-chief of the Canton-Hankow Railway, re. progress made during the year 1915:

The purchase of all land required for the line from Wuchang to Changsha—226 miles—was completed during the year. Owing to high floods and exceptionally heavy rainfall, there were numerous delays in earthwork, but very fair progress was maintained through the year. Up to the end of the year 3,824,645 cubic *fang* of earthwork in cutting and embankment were completed, this quantity representing 61 per cent. of the total amount to be done. The monthly output in earthwork has increased at a very satisfactory rate from month to month.

Quite good progress was maintained in the building of bridge abutments and culverts; all masonry and concrete work over the first 36 miles has been completed, and between 40 and 50 per cent. completed on the remainder of the line. The war in Europe has given rise to delay in delivery of the first indent for bridgework, the whole (with exception of two 60-foot spans lost on the s.s. Diomed) have been received, and the steelwork is being erected on the first district from Wuchang. The cost of steel bridgework under contracts let in the latter part of the year shows great increase over former prices.

Track-laying has been seriously delayed, owing to the settlement of an embankment in swampy ground near the 9th mile; the settlement has been slow, and the process of making up and consolidating the bank a tedious one. The general office, the residences of the managing director and the engineer-in-chief, and all staff quarters were completed during the year and occupied.

"An electric power plant purchased from the I-Kwei (American) section is being erected. In the meantime the quarters are being supplied with electricity from the Wuchang Light and Power Company. During the early part of the year we dispensed with the services of four foreign engineers, owing to the desire to economise. Since then nine have left, the majority of them having gone to the war."

The report from the Commissioner states that regular traffic on the Nan-Hsun Railway connecting Kiukiang with Nanchang, the provincial capital, was opened on the 1st January, 1915, though a large iron bridge at Tukiafow was still under construction. As it has been impossible to obtain the materials necessary for the bridge owing to the war, it has been decided to build a wooden bridge instead, and this, it is expected, will be finished within another three months. The traffic on this line has not been very remunerative so far: the amount collected on freight and passenger traffic averages about $500 per day, though more business is expected when the bridge is completed.

From Nanking the Commissioner reports that the most interesting event in connexion with the port that occurred in the period under review was the opening to trade of the wharves of the Tientsin-Pukow Railway, which event took place on the 1st July. Simultaneously the limits of the harbour were extended to the left bank of the Yangtze to enable vessels to moor at the railway wharves. This Customs office, however, did not reap much direct benefit from the increased facilities thus afforded to shipping till the latter part of the year, when the block of cargo at Pukow became so great that it became necessary to enlist the aid of steamers to carry part of the accumulated cargo.

Up to this time the bulk of the goods arriving from the North had continued to proceed to Shanghai by rail, as previous to the opening of the railway wharves to shipping. It would appear to be more economical for cargo destined for ports beyond Shanghai to be shipped direct to destination from Pukow, instead of being sent by rail to Shanghai and thence shipped to port of destination. In spite of the fact that most of the export business is financed at Shanghai, there are already indications that direct trade between Nanking and coast ports is growing.

Except on the Lung-Ts'in-Yu Hai Railway practically no construction work has been carried out on the railways in this neighbourhood during the year under review. The difficulty of raising loans in foreign countries has been the main obstacle to progress in railway construction. Work has been completely stopped for the time being on the Pu-Hsin Railway, and the work carried out on the Ning-Hsiang Railway has consisted entirely of making surveys of the proposed route. Whether the main line of this railway when completed shall first reach the Yangtze at Nanking or at Wuhu is a matter of great importance to the ports concerned; still more important would the consequence be if this railway found its main outlet to a deep-water harbour through one of the several branch lines which have already been projected to connect with the main line.

The railways already in operation have been doing well, more particularly during the latter part of the year. I have referred above to the accumulation of cargo at the Tientsin-Pukow wharves, which at one time amounted to no less than 40,000 tons. It is estimated that the Shanghai-Nanking Railway carried

from Nanking to Shanghai during November and December more than 50,000 tons of cargo a month, practically all of which was transported under likin control.

The proportion between goods exported by rail and goods exported by steamer to Shanghai may be reckoned as being in the ratio of 7 to 3. Of the imports which arrived from Shanghai, it is estimated that about 70 per cent. were carried by steamers and about 30 per cent. by rail, and that of the rail-borne imports about 40 per cent. were covered by Customs documents.

Chinkiang formerly found itself admirably situated as a trading centre, owing to its proximity to an ideal inland water system, through which cargo could be distributed to, and collected from, many provinces. Progress in the way of railways has, however, been detrimental to the port while benefiting the places of consumption and production, that is to say, Chinkiang has lost the handling of a large part of the trade, while the consumer or producer has benefited, principally by rapidity in transport.

The trade is not lost--it is only lost to Chinkiang. There is no getting away from the fact that Chinkiang is side-tracked. The effect of the above is shown in the value of the trade of the port, which for the past ten years has consistently dropped year by year. The decrease of over 2 million taels in 1914 brings down the net value in 1915 to Hk. Tls. 19,152,585, or 54 per cent. of the 1906 figures. There is, however, a gleam of sunshine.

In September the Grand Canal Conservancy Bureau entered upon a comprehensive scheme of canal improvement, estimated to occupy three years. After that, it is confidently expected that the canal will be found to have a sufficient depth of water in the winter months to enable free traffic during that busy season of the year, and sufficiently stable banks and dikes to prevent the recurrence of the floods of the past, which have devastated from time to time the rich and highly cultivated country through which the canal passes. The work comprises the repairing of dams, the building of additional stone dikes, and the dredging of the shallows between Kwachow and Tsingkiangpu. Four dredgers are employed, and already there are signs of good work being done.

This has been a crying need for some years, for it must be admitted the canal deterioration has greatly assisted the various railways in deflecting trade. There can be no doubt that this and the larger schemes for the conservancy of the canal as a whole, as well as of other inland waterways, will be of immense benefit to the trade of China.

Still, although Chinkiang will undoubtedly benefit, it must not be expected that the effect will necessarily be reflected in that part of the trade that happens to pass through the Maritime Customs at Chinkiang—the improvements will be provincial rather than parochial.

The latest link in the chain of railways, the Lung-Hai, should shortly be ready for goods traffic between Hsuchowfu and Kaifengfu. This is a fine wheat country, where a bumper crop was garnered. In fact it may be generally stated that the harvests in the surrounding country have been the best for many years.

CONDITIONS IN THE PHILIPPINES

[By Harold M. Pitt, President Manila Merchants' Association]

With hemp worth P407.00 per ton, in June, 1916, as against P285.00 in June, 1915; with copra worth P230.00 per ton, as against P165.00; with tobacco worth P303.00 per ton as against P309.00 and sugar worth P122.00 as compared with P102.00, the Islands were able to show an enormous increase in the value of exports and to increase the favorable balance in trade, that amounted to over P23,000,000 for the first five months of the year, to nearly P33,000,000 for the six months comprising the first half of the calendar year 1916.

The Customs record for the month of June was little short of remarkable, both in respect of the value of exports and the great excess of exports over imports.

Copra exports have shown a decided falling off throughout the past twleve months as compared with the twelve months preceding. In May of this year the loss in comparison with May, 1915, amounted to nearly two million pesos. The falling off for the month of June was P635,572.00, and as June showed a gratifying increase over May, in both quantity and value of the copra exported, it may be taken for granted that copra production has made a definite upward turn and that we shall see material improvement as month succeeds month. The manufacture of coconut oil is, of course, absorbing a considerable amount of copra that formerly went into export. The coconut oil exported in June was greater in value by P271,904.00 than for June of last year, but copra is the only item on the list of exports that shows a material decrease for the month.

The increase in the value of hemp exported in June as compared with June, 1915 exceeded the decrease in the value of the copra, but the great increase was recorded by sugar, which jumped from P3,400,000 to P6,494,000. Earlier reports were to the effect that, although the planting for the 1915-16 season was considerably greater than for the preceding year, the continuous rains had made it impossible to mature and cut the cane, and much of it would therefore have to be left in the fields. It was estimated that this loss would about neutralize the increased acreage. These calculations, however, appear to have been discredited, as sugar exports for the first six months of 1916 show an increase over the first six months of 1915 of a little less than 100,000 tons in quantity and of nearly twelve million pesos in value. Taking the figures for the Fiscal Year ending June 30th, a comparison of 1916 with 1915 shows an increase in the amount of sugar exported of 125,000 tons and in value of P14,981,122.00. This suggests that the increase is very largely in the new crop and it is therefore apparent that the planters must have succeeded in harvesting and grinding practically all of the cane planted.

The increase in the value of hemp exported in June over June of last year is accounted for entirely by the increased value of the product. Exports in June, 1915, were 23,239 tons and in June, 1916, but 17,836 tons, showing a falling off of between five and six thousand tons in quantity, although the total value of exports for June of this year was greater by P642,065.00 than for June, 1915.

Knotted hemp and maguey have both recorded a material increase in June over June of last year, and the value of the latter product has advanced in consonance with the increase in the value of hemp.

Exports of leaf tobacco show a falling off in June of P174,182.00 although for the first six months of this year they were greater by P982,654.00 than for the first half of 1915, and for the Fiscal Year ending June 30th the increase was in excess of one million pesos as compared with the Fiscal Year 1915.

In this number of the Review we are publishing Customs reports for June, 1915 and 1916 and reports covering the foreign commerce of the Islands for the Fiscal Year ending June 30, 1916, together with comparisons with the year preceding. The Fiscal Year figures are arrived at by combining the reports of the Bureau of Customs covering the first six months of the present year with the monthly reports from July to December, 1915. We are also reproducing the report of the Internal Revenue returns that are made public by the Bureau of Internal Revenue consisting of a comparative statement of collections during the period January 1st to June 30th of the years 1915 and 1916.

The Customs reports, in so far as they relate to exports, are extremely gratifying and reflect a material increase in the production of many articles, as well as an active market for all that can be produced for export and at satisfactory prices.

The excess of exports over imports for the first six months of the year, is little short of phenomenal, and the wonder is that internal business has not realized more pronounced benefits therefrom.

Importers are still having difficulty in securing supplies and this would naturally affect the consumption of imported articles to a greater or less extent.

The report of the Collector of Internal Revenue shows that there was an increase in collections from the business tax of P827,905.00 for the first six months of 1916 as compared with the same period of 1915. The report covering collections for the first quarter of 1916 showed an increase over 1915 of P671,900.00. The greater increase for the first quarter was due to the fact that the collections during January, February and March of 1915 were for the business done in the last quarter of 1914 when the tax was but one-third of one percent. The comparison of the second quarter of the two years shows an increase for 1916 of P150,000 which would represent a gross business of P15,000,000 on the basis of the one per cent tax. But in 1916 the exemption with regard to exports was abolished. Thus in 1916 the tax included collections on the export business, which would more than account for the increase in business indicated by the increased collections. Also, other lines of business were brought under the merchants' tax provision that did not pay this tax in 1915, but as an offset could be counted the quarterly tax paid by small dealers who are exempt from the percentage tax by reason of the limited amount of their trade, but who, beginning with January 1st, of this year, were made to pay an annual tax in the form of a license, whereas in 1915 a tax was collected from them quarterly. There are many of these small dealers and the aggregate of the quarterly tax formerly paid by them, if figured on the basis of one per cent, would represent a considerable volume of business. This quarterly payment does not appear in collections for the second quarter of 1916 but was included in the collections for the second quarter of 1915.

Tax collections on distilled spirits for the six months of 1916 showed an increase of P266,447.78, whereas for the first quarter of the year it amounted to P278,854.84. This indicates that the collections for the second quarter were P12,407.00 less than for the second quarter of 1915. The reduction in the tax from P.0.35 to P.0.30 per proof liter, would more than account for this loss. The increase in the first quarter was due to distillers holding back on withdrawals at the close of 1915 in order to obtain the advantage of the lower rate that went into effect with the new year. The situation the preceding

year was exactly the opposite. In December, 1914, distillers withdrew from bond all they were able to as the tax was increased on January 1st, 1915, from P.0.25 to P.0.35 per proof liter. This made the collections in the last quarter of 1914 exceptionally heavy and those in the first quarter of 1915 correspondingly light.

In the case of cigarettes there was a gain in collections for both quarters, although the increase for the second quarter was comparatively small, amounting to but P47,903.00. There was no change in the tax on cigarettes this year, the emergency rate being continued, but the collections in the first quarter of 1915 were light for the same reasons that apply in the case of distilled spirits.

Collections from the tax on gasoline were greater by P66,310.00 in the first quarter of 1916, than during the corresponding period of last year, but for the six months of 1916, the increase was but P10,355.00, showing a loss for the second quarter of approximately P56,000.00. This could be accounted for by a decrease in the tax rate of 25%, the tax being P.0.04 per liter for 1915 and P.0.03 per liter for 1916.

In the case of petroleum, the collections for the second quarter of 1916 show a falling off of P162,191.00 as compared with 1915. The increase in the collections for the first quarter was P187,909.00, while the increase for the six months was but P25,718.00.

The report for the six months shows a net increase in collections from all sources of P1,692,572.00. This cannot, however, be credited to any increase in actual business, but is the result of increased rates of taxation and the unusual conditions affecting such important items as distilled spirits and cigarettes that have been referred to.

The heavy exports for the past six months, considered in connection with the exceptionally light imports, would suggest a large accumulation of money in the Islands, the beneficial effects of which should soon be felt by industry generally. Difficulties that have been experienced by importers promise soon to be abated and within the next three or four months a decided improvement should develop in commerce.

The season's export of sugar has about ended and a cessation may be looked for in hemp receipts.

Favorable weather conditions will doubtless stimulate the production of copra, and there are products, such as maguey, rattans, and various manufactured articles, including pearl buttons and embroideries, that will steadily increase in importance and make a substantial addition to the export business of the Islands.

Following are the figures of exports and imports for 1916 by months, from January to June, inclusive:

	Exports	*Imports*
January	P11,902,944	P7,926,391
February	9,029,570	4,804,897
March	12,393,236	7,206,511
April	9,096,170	6,757,355
May	14,874,994	7,227,622
June	16,636,339	7,127,766

The highly favorable crop reports that gave promise of bumper yields in sugar and rice and the maintenance of a fair average production in the other products, have been materially modified by more recent information from provincial sources. From Cagayan comes word that heavy rains and floods, together with high winds, played havoc with the tobacco. The rice crop of Central Luzon has suffered damage from similar causes while from present indications the sugar crop of Negros will fall 20 or 25 per cent under what was predicted. This season's rice crop will go above the average, while it may fall below. This means that the islands will have to pay out for foreign rice anywhere from P7,000,000 to P10,000,000.

The freight condition is, if anything, becoming rapidly more difficult. Thus in the case of sugar, where large returns were expected, it is probable that the crop will little more than justify the cost of harvesting and milling on account of the great expense attaching to transportation. Hemp and copra furnish exceptions in a far from favorable condition. Customs returns for the month of January, which have just been made available, show an increase in exports of P1,300,000, as compared with last year. There was a heavy drop in exports of both copra and coconut oil, the latter due doubtless to paucity of shipping facilities. Hemp made a big gain, jumping from P3,700,000 in January, 1915, to P5,400,000, for the same month this year. Exports of sugar also increased materially—from P321,000 to P1,512,000. Cigars and tobacco showed substantial gains, and embroideries and hats contributed materially to the increase, which effected an offset to the falling off in copra and coconut oil. In imports there was a net decrease of P1,436,771. A number of items showed an increase over January of 1915, among them being wheat flour, cotton goods, oils, silk, and liquors. The heaviest decreases occurred in rice, illuminating oil, and iron and steel.

WOLFRAM IN BURMA

In view of the great interest aroused in Malaya and other tin mining centres in the development of the Burmese wolfram industry, it will be interesting to note that the matter has assumed such practical and important proportions that one of the largest British firms dealing in this product has begun to move in the East, and has set up a laboratory and buying business in the Tavoy district of Burma, the centre of the wolfram industry in the East, where they are also acquiring concessions.

Important information just to hand is that the High Speed Steel Alloys, Ltd, composed of thirty-one of the biggest steel manufacturers in the British Isles, and including such firms as Messrs. Vickers, Armstrong Whitworth, Cammel Laird, Balfour Ltd., Edgar Allan, Osborne, Jessops, etc., have now permanently established themselves at Tavoy, and have already fitted up a large laboratory in which highly qualified and experienced assayers are at work on wolfram ores. A large plant of machinery is on its way from England and electromagnetic separators of the latest designs, specially made for dealing with wolfram, tin-ore, and monazite concentrates are to be erected immediately. The General Manager is Dr. William R. Jones, D. Sc., formerly Assistant Geologist in the Federated Malay States.

The High Speed Steel Alloys, Ltd., use over 80 per cent of the wolfram imported into the British Isles, and have erected large works at Widnes for the manufacture of pure tungsten metal. They have been able to produce tungsten of higher purity than was placed on the market by the Germans before the war. Their activities in Tavoy are not restricted to the buying of wolfram, but they are taking up large concessions with the view of working them systematically. It is to be hoped that their representative will visit the country in which he did a great deal of most useful geological work, and give further incentive to the prospecting of wolfram as he did for tin-ore.

Commenting on the above, the *Times* of malaya says: A great deal remains to be done in Malaya to make it impossible for German influence, after the war is over, to procure tungsten ores, and now that an all-British Company, with unlimited resources behind it, has taken up the matter seriously, it is to be hoped that a repetition of a German monopoly in wolfram and scheelite will be rendered impossible.

MELTING AND REBOILING MUSCAVADO SUGAR

The Bureau of Science of the Philippines has issued a bulletin shows how the central sugar mills in the inlands may help planters and increase profits.

Muscavado sugar is the more or less impure product that results from the direct evaporation of cane juice, which usually has a water content of about 82 per cent. The muscavado sugar has two per cent or more water, according to the purity of the juice; the purer the juice, the dryer it can be made on the crystallising boards, providing it is well treated throughout the process of manufacture.

The demand for muscavado sugar is decreasing year by year. As long as centrifugal sugar can be purchased, muscavado sugar either brings a lower price or is unsaleable. Therefore, at most times muscavado sugar can be purchased at a price at which there is a profit in melting and reboiling. Any central factory, at small additional expense, can use considerable quantities in its regular process without the use of extra fuel; or, when otherwise unoccupied, may take up the reboiling of muscavado sugar as a special industry.

The sugars obtained by the muscavado process vary in sugar content, as shown by the polarisations, to such an extent that it is necessary arbitrarily to differentiate between them. The Bureau of Science each year fixes the sugar standards which shall govern during the year.

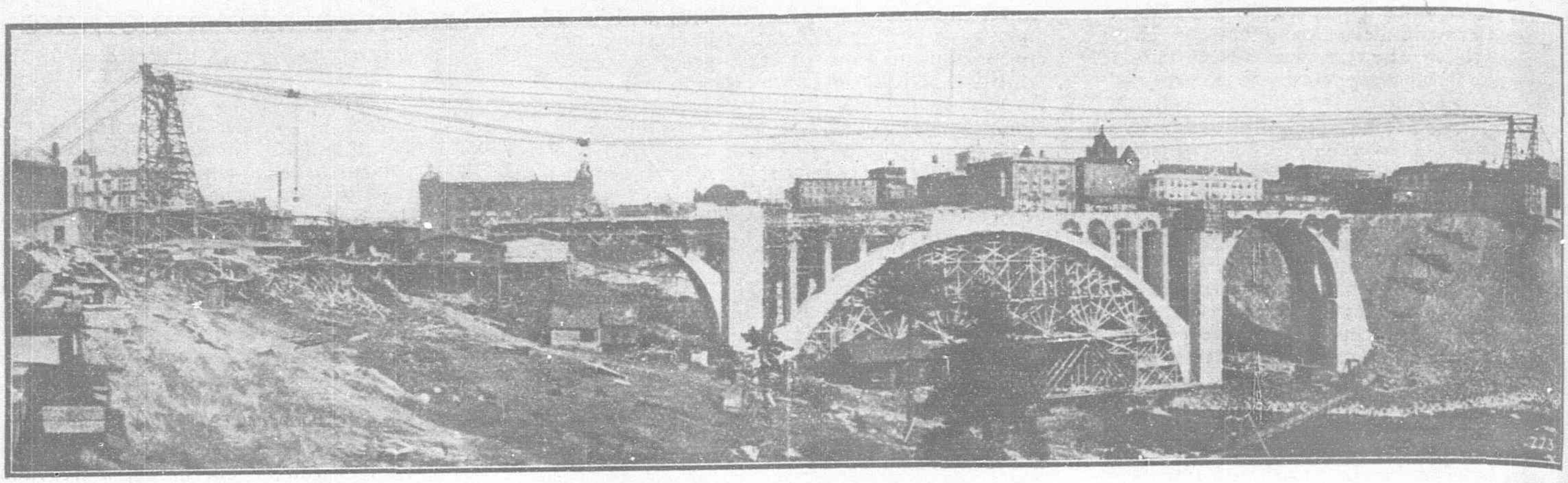
In a central mill the muscavado sugar may be dissolved in a regular melter, which is a circular tank provided with a stirrer; or in the absence of this machine; the sugar may be introduced into the defecators, eliminators, or other tanks containing hot juice; or in still other ways, for example, by allowing the clear hot juice from the subsiders to flow into the sugar suspended in a screen basket. A screen should be used in case to remove the portions of caramel or other foreign matter contained in the muscavado sugar. The high-grade sugars may be melted and reboiled directly, but the low grades will require treatment with lime to neutralise their acidity. Therefore, the low grades can be remelted to best advantage in the defecation tanks, where they will receive the same treatment as fresh juice. This is why sugar can advantageously be melted in centrals in connection with their regular operation. The amount of sugar that can be melted daily will depend not only on the cane supply, the amount of syrup and molasses in storage waiting to be boiled, etc., but also on the factor of safety which was provided in the design of the boiling house. A small, 150-ton should be able to utilise 50 or more piculs of muscavado sugar daily. One large central factory in the Islands is now melting from 300 to 400 piculs daily without difficulty.

The melting of muscavado sugar serves a dual purpose; (1) it creates a demand for muscavado sugar, which relieves the economic pressure on the hacenderos, and (2) it offers the manufacturers an opportunity to make a profit in melting at little inconvenience and expense.

Owners of centrals or of plants equipped with vacuum pan and centrifugal machine are urged to take up this new business as it is a profitable industry.

TSINSHAN WIRELESS RECONSTRUCTED

The wireless station at Tsinshan, erected in 1908 to facilitate rapid communication with the gun-boats patrolling the waters of the delta for the suppression of piracy, and which was destroyed on the outbreak of the Revolution, has been rebuilt and is now in working order.



Duplex Cableway Building Monroe Street Bridge, Spokane, Washington

LIDGERWOOD CABLEWAYS

The Lidgerwood Cableway is a hoisting and conveying device operating over a single span, the load carriage traveling over a cable suspended between two towers. The load may be lifted from any point, conveyed in either direction, and lowered wherever desired along the line of the cableway.

The great advantage of the cableway for handling material is that its operation does not interfere with other work being performed under its span, the towers being located clear of the work, and the cable suspended well above. In dam and bridge construction the cableway spans the river, the material can be carried along the cableway and deposited at any point of the dam wall or bridge structure without interfering with the operations on the intervening portions of the work. They have been installed where they have crossed railroad tracks, streets, etc., and have run continuously without any interference with traffic. The advantages of this are obvious.

The Lidgerwood Cableway is used in the construction of bridges, locks and dams, filtration systems, and general concrete work; for tunnels, railroad cuts and open pit mine and quarry work; and for a variety of industrial purposes such as coal storage, handling cargo, and gathering and handling logs at mills for manufacturing lumber and pulp making. The cableway handles loads in ordinary skips, slings, automatic dumping skips, and automatic dumping concrete tubs. It operates both grab and scraper excavating buckets.

Varieties of Cableways

Lidgerwood Cableways are built in various types to meet differing requirements. They are built with both towers fixed; with one tower fixed and the other traveling radially about it; and with both towers traveling on tracks parallel to each other; also with two cables suspended from the one set of towers. They have been installed for landing cargo with one tower on shore, and the other on floating pontoons. They have been built in spans exceeding 2,000 feet, and under favorable conditions longer spans are entirely feasible. We have built numerous cableways carrying loads of 25 to 30 tons, and heavier loads where desired are practicable. The superiority of Lidgerwood Cableways is the result of the care with which each installation is designed and constructed. Competent engineers, long trained in the designing of cableways, are employed. Improvements are made as experience indicates, resulting in the highest efficiency.

Cableway Engineering

The physical conditions of cableway installations differ greatly and the nature of the duties they perform is so diversified that each individual installation is a separate engineering proposition. Its location, the duty it has to perform, and the relationship of the work it has to do with that of the other units of equipment on the contract, demand that it be designed by competent and experienced engineers. Each cableway must be designed with reference to the span, the tower heights and locations, the profile of the intervening land, and the duty it should perform.

Lidgerwood Cableways Used in Bridge Building

The illustration shows the Monroe Street Bridge at Spokane, Washington. Two Lidgerwood cableways were used upon this work. They were suspended between twin towers, the span of each being 1100 feet. Both the twin head and tail tower were 100 feet in height. They were designed to handle average loads of 3½ to 4 tons, and occasional loads of 5 tons. The engines had double cylinders 9″ diameter and 10″ stroke. The value of the cableways upon this work is shown in the following description of the work, by Mr. J. F. Greene, Assistant Engineer. The cableways not only handled the steel work forms, etc., in addition to the concrete used in the construction, but also were used in the removal of the steel structure which the new bridge replaces.

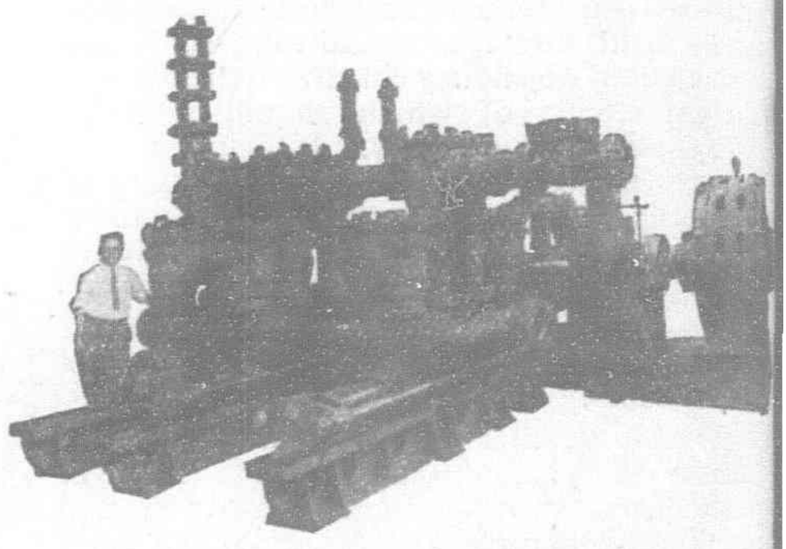
"The new bridge is 790 feet long, consisting of five spans, four arches and a half arch with piers and abutments," states Mr. Green. "At the south end a timber trestle will serve as a temporary approach until the completion of an extensive earth fill. This approach to be 350 feet long and to contain about 300,000 feet of lumber. A riprap wall has already been placed as a toe for the earth slope adjoining the river, this wall containing 12,000 yards of rock, all of which was handled by the cableways from the north end of the bridge. The rock was carried in large wooden boxes in loads of 4 to 6 tons.

"The bridge will have a 50 foot roadway with two 9 foot sidewalks with a reinforced concrete hand rail. The beams of the roadway are made of structural steel encased in concrete; the slabs are of concrete, reinforced with wire mesh. The arch rings were designed to carry their loads without reinforcement, the lines of resistance in all cases falling within the middle third; a small amount of steel however, was placed in the rings. The removal of the old steel was effected by the cableways alone without the aid of derricks. In the erection of the centering under the 281 foot arch the steel truss was raised with both derricks and cableway, the latter being used both for fetching the steel members and placing in conjunction with the travelers.

"All falsework bents were framed and packed at the north end of the bridge and erected with the cableways, the heaviest bent consisting of four 18″×36″ long with 4″×10″ bracing and walling. All of the concrete form work was raised in panels, the largest being 20 feet by 2″ sheeting with 3″×8″ stubs, the forms being placed almost entirely with the cableways. The amount of concrete handled in a day varied with the length of the run on the cableway. With a lift of 100 feet at the mixing end, a run of 600 feet and a lift at the concreting end of 100 feet and a 1½ yard bucket, the average run was 36 yards an hour."

LARGE ELECTRICALLY DRIVEN MINE PUMP

The El Oro Mining & Railway Company, of El Oro, Mexico. has installed what is said to be the largest motor-driven pump equipments ever built for unwatering a mine. The pump, which was built by the Goulds Manufacturing Company, Seneca Falls, N.Y., has a capacity



of 500 gal. per minute. The construction is such that the pump can be readily dismantled and lowered down an ordinary mine shaft, and when assembled it requires a very little head room. The pump is installed in the bottom of the mine and works against a head of 1,300 ft. The driving motor is a 200-H.P., three-phase, 50 cycle, 440 volt, 485-R.P.M. Westinghouse machine, connected with double reduction gearing giving the crank shaft of the pump a speed of 35 R. P. M.

SEWING MACHINES IN SIBERIA

Siberia offers a promising market for sewing machines. Outside of those made in Russia by a well-known American company, the greater number sold are of German origin, and supplies of the latter are now exhausted. The machines are bought on the basis of extended monthly payments. The following are the normal prices of these machines, delivered, duty paid, at Omsk: Long shuttle, $9.12; ring shuttle, $12.36; central spool, $13; vibrating, $10.09. All machines are to be made with covers, or, if without, they are $1.03 cheaper. The terms are nine months' acceptance from the date of shipment, duty and freight to be paid by the purchaser.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RIVERS AND HARBOURS

Osaka Harbour Works.—The construction of harbour accommodation at Osaka is to be postponed for five years because the Osaka Municipality is short of money. The Home Office has just granted official sanction for the step taken, after the examination of the city's finances. Osaka business men criticise the step taken by the Osaka Municipality and the Home Office adversely as checking the progress of industry and commerce in Osaka. In an interview, the Home Office authorities said that the completion of harbour accommodation at Osaka is not so imperative as to be facilitaed in the face of the weakness of the municipal finance because the port is at present the gate for Osaka only, trade with Europe, America, and China being handled by Kobe.

Karatsu Harbour Works.—It is reported from Saga that the Karatsu harbour improvement works have been approved by the Japanese Government. The project will require a capital of Y.1,500.000, two-thirds of which will be raised by public subscription. The sea front of Nishi-Karatsu will be reclaimed to the extent of 35,000 tsubo and a breakwater will be constructed at a point north-west of Oshima Island. A pier 280 yards long will also be built for the accommodation of steamers visiting the port. The proposed works will take five years to complete.

Yokohama Insistent on Harbor Industries.—A strong note of insistence rings through a communication of the Yokohama City Assembly sent the Government in which Yokohama asks permission for the establishment of shipbuilding yards or other shore industries in the harbor. Mayor Ando presented the note to Dr. Ichiki, Minister of Home Affairs. It reads as follows:

"It is useless to state here that the future prosperity of Yokohama depends upon the improvement of the harbor. The city built the new Customs compound with co-operation of the Government, which shows the special attention we are paying to the development of the port. For the industrial progress of the city, the mayor made a plan some time ago with an object of inviting industrial establishments and the municipal authorities are now giving special concessions to factories established within the city's fixed industrial zones. This object is undoubtedly to improve industrial undertakings taking the advantage of the harbor.

"The city is welcoming establishment of industrial works and for their convenience may sacrifice even a small portion of the harbor if it does not interfere with the prosperity of the port.

"When Mr. Asano, president of the Toyo Kisen Kaisha, made application a few months ago, asking permission to reclaim the shore-front of the harbor, the plan was received with the unanimous approval of the assembly, but the application was rejected by the Government harbor committee. If the port can not have a shipbuilding yard, its prosperity will be injured. With even a small portion of the harbor reclaimed, the prosperity of the city can be easily maintained by the establishment of a shipbuilding yard. As the matter has a close relation to the future of Yokohama, the Government will please make a favorable reply to the municipality."

Kongmoon Bunding Progresses.—The work on the bund near the Maritime Custom House, which was started the year before, has been completed, but the remaining 380 feet of the river bank between the said section of the bund and that of the Canadian Presbyterian Mission still await bunding, owing to the lack of enterprise of the few landowners who possess them.

Macao Dredging and Drainage Work.—During the year a harbour commission has been engaged in ameliorating the harbour of Macao. A sea-going dredger has been ordered and will presumably be employed in improving the channel leading to the entrance to Macao harbour. It may be recalled that in 1911 the Macao Government entered into a contract with a Hongkong engineering firm to dredge a channel of 6,000 metres with a uniform depth of 12-feet. Since then the channel has shoaled somewhat and at low water even some of the shallow-draught river steamers are occasionally forced to await the rising of the tide to enter the harbour. The construction of a typhoon refuge for small craft is also being undertaken between Green Island and Macao, where a dredger is now at work excavating a basin for this purpose. Having by the aid of the hydraulic syphon system of drainage practically stamped out plague in Macao, the authorities are now turning their attention to malaria, and the low-lying ground with its stagnant pools east of the city, is being filled in with soil from the Mongha Hill. To facilitate this and also further reclamation work in the vicinity of Green Island, a light railway has been constructed and is in operation.

ELECTRIC LIGHT AND POWER

Samshui Electric Plant.—The electric-light plant, with a capacity of about 3,000 lights, erected at Sainam commenced to supply current to Sainam and Samshui in September, and the quality of the light provided is very fair. The success of this and of other small plants, and the greatly enhanced price of mineral oil, has led to other towns making plans for similar installations, and the erection of a plant at Chingyuen, on the North River, has been determined on.

Wuchow Electric Company.—The Wuchow Electric Light Company was reconstructed in November 1914, and early in the following year operations were commenced. Within a short time the laying of the street wires was completed, so that by May the inhabitants were able to enjoy the benefits of electric lighting, save during July and August, when, owing to the floods, almost all the street wires were destroyed. The installation is run by a suction-gas power plant, and the quality of the light is most excellent and has greatly risen in popular favour, all the leading shops, hotels, and flower-boats being now lit by electricity. For the last named the current is conveyed by wires from the shore to structures built on the roofs of the floating hotels and then connected up with the numerous flower-boats which congregate around them, giving quite a gay and bright appearance to the Fu River at night.

Canton Expands Electric Plant.—The Canton Electric Supply Company has made remarkable progress during the year; the monthly receipts are reported to amount to $60,000, and new customers are continually presenting themselves. This increase of business called for additional plant; but this was rendered a practical impossibility by scarcity of freight space and the rising price of electrical material, all of which is manufactured outside of China. This inability to extend the works naturally limited the increase in earnings.

CHEMICALS AND DYESTUFFS

New Chemical Industries of Japan.—As a result of the war, many new industries have arisen in Japan, the chief ones, according to the investigations of the Department of Agriculture and Commerce, being the following:

Dye-stuffs—Aniline salt and black dye-stuffs are produced not only by dye-stuff manufacturing companies under the support of the Government, but also by the Tokyo and Osaka Gas companies, and the Mitsui Mining Companies. The output is now on the increase.

Chemicals—Such chemicals as subnitrate of bismuth, salicylic acid, antipyrin, acetate of calcium and formalin are now being produced in large quantities.

Glass wares—The output of plate glass by the Kyushu Asahi Glass Ware Manufacturing Company has been greatly increased not only to meet the demand at home but also to meet the requirement from South Pacific countries, Australia and France.

Celluloid—Extensions have been undertaken by many companies and the revival is now setting in this trade. The output has been doubled.

Paper—On account of the war, imports from Europe to China, India and the South Pacific countries have totally ceased. As substitute Japanese articles have been exported to these countries to the amount of 4,340,000 yen. The tendency is toward an increase.

Pulp—Since the war began, the pulp manufacturing industry in Japan has made a remarkable progress and the output is expected to increase to 140,000 tons next year. The establishment of more new factories is expected.

Yellow phosphorus—Yellow phosphorus is now produced in Japan.

Potassium chloride—Since the stoppage of foreign imports the deficiency of potassium chloride has been made up by the establishment of a number of factories, and the supply of this chemical is now abundant.

Chemical Works of Japanese.—According to the latest investigation of the Department of Agriculture and Commerce, the total number of factories engaged in the production of chemicals in Japan is 3,225, and the number of operatives 93,422, the total products reaching Y217,406,987.

The following shows chemical products of annual value exceeding Y500,000 (in thousands of yen):—

Earthen ware & Porcelain, 5,198; Enamelled Ware, 1,297; Lime, 2,323; Brick, 3,595; Leather & Refined Skin, 6,953; Camphor and Camphor Oil, 3,770; Naphtha, 864; Light

Oil, 1,920; Lubricating Oil, 953; Other Vegetable Oils, 3,747; Rapeseed Cake, 3,897; Medical Materials, 1,423; Caustic Soda, 505; Sulphate of Ammonia, 1,579; Other Chemicals, 5,934; Rubber and Ebonite Manufactures, 6,183; Candle Wax, 786; Toilet Articles, 1,307; Miscellaneous, 5,914; Japanese Paper, 7,596; Cement, 12,221; Coke, 3,665; Tiles, 1,068; Foreign Paper, 10,215; Matches, 18,241; Peppermint Oil, 1,079; Lamp Oil, 7,279; Heavy Oil, 766; Bean Oil, 1,365; Fish Oil, 1,416; Drugs and Medicines, 19,901; Sulphuric Acid, 1,943; Potassium Iodide, 800; Bleaching Powder, 787; Celluloid Manufactures, 943; Soaps, 4,988; Paints, 4,486: Fertilisers, 23,987.

For More Dye Stuffs.—A grant was recently given the Japan Dye Stuff Manufacturing Company for the purchase of two dyestuff manufacturing factories belonging to the Nihonseimi and the Osaka Gas companies. Manufacture was started July 17.

From next month, yellow, pink and black colors will be put on the market but, as it is only an experimental production, it is small in quantity.

Upon completion of a principal factory, each color will be produced to the amount of 800 kin a month. Of the three colors, the black is made by a particular manufacture, especially in use in Japan. New machinery from America is expected to arrive in September.

Caustic Soda Exports of Japan.—Caustic soda is being exported in increasing quantities, though still under an embargo, as the Government is inclined to give export permits for the weaker varieties, now that the production at home has been so increased that but for the export of the weaker sorts the market might be glutted very soon.

At present the goods available for export are produced by the Kwanto Acid and Soda Company and the Osaka Chemical Industry Company. The latter has already shipped 200,000 lbs. through the Mitsui Bussan Kaisha, while the former has exported to a somewhat greater extent. The market for those producers at present is found in China, Russia, and the South Sea Islands.

The Tokyo Alkali Industry Company, which has just been promoted to produce alkaline compounds out of brine by a patented process, is to commence operations very shortly. The company has secured the patent right taken out by Dr. Ogawa of the Tohoku Imperial University and Dr. Nukada, for the special process of producing alkaline compounds used for industrial purposes, and intends inaugurating this useful branch of industry both in Tokyo and Okayama prefectures with a capital of 500,000 yen.

Superphosphate in Japan.—An event in the Japanese artificial fertilizer market is the production of bi-superphosphate and its shipment to British India where German goods alone have been on the market. The new factory for the production of bi-superphosphate, which the Dai Nippon Artificial Fertilizer Company has been building for some time past in Osaka, has just been completed. The producing capacity of the new plant is 50 tons a day maximum quantity, but soon it is to be enlarged.

The goods have not been produced here before because in this country no strong fertilizers are favoured by farmers, and there is little demand for bi-superphosphate. Some time ago a representative was despatched by Java sugar planters to Japan to secure a regular supply of bi-superphosphate.

Although this attempt failed, it furnished a strong inducement to the Dai Nippon Artificial Fertilizer Company to begin the manufacture and capture the trade which was regarded before the war as one of the greatest assets of German industrial workers.

Nippon Paint Company.—With only one competitor, whose output is less than one-fifth as great, the Nippon Paint Company of Shinagawa is enjoying a prosperous trade. The lone competitor is the Abe Paint Factory in Osaka. The Nippon Company says its product is up to the standard of the best English paints to be had in the Ear East. The paint is being largely exported to China, Australia and India. The demand for home use is also increasing because of the absence of the imported stock. The company made a net profit of 230,000 yen in the half yearly business term just passed while the net gains in the preceding term were only 140,000 yen. Consequently, the dividends to the shareholders were increased from 12 per cent to 20 per cent.

Japan's Importation of Fertiliser.—For 1915 the imports of fertiliser greatly decreased compared with the usual year, as freight space was short and the heavy depreciation of rice straitened the farmers' finances not a little. In 1916, importation has been still smaller. For the first five months the figure shows a loss of Y10,000,000 from 1914 and of Y3,040,000 from 1915. Phosphorites and sulphate of ammonia fell off most. The former was only Y580,-064 as against Y4,499,009 in 1914 and the latter only Y39,533 as against Y7,034,166 in 1914. The only exception is bean cake, the importation of which increased and reached Y20,368,-148 as against Y17,832,387 in 1914.

Japanese Dye Factory.—The plant of the Nippon Dyestuff Company, ordered from an American engineering company sometime ago, is already en route, and the company expects that in October actual operations can begin. The company recently approached the Nippon Yusen Kaisha and the Communications Department with a request that the plant, which has been sent by the manufacturers to Seattle overland, be landed here at the earliest opportunity. Meanwhile the company is pushing the construction of a laboratory, and two factories where aniline and sulphuric acid will be turned out. When the plant arrives in October, these will be ready, and the supply of raw materials from the Government Iron Works at Yawata will begin. In November the products of the new company are expected to be placed on the market. For the first period the maximum production will be half-a-ton a day. The whole of the company's works will not be completed before February next year.

Japanese Dye-Stuff Factories.—Not a few dye-stuff manufacturing companies have been established last year, but, excepting the Japan Dye Stuff Company, dye-stuff making is not yet fully developed. Although such companies as Tokyo Gas, Osaka Gas and Osaka Seimi are producing dye-stuffs out of coal tar, which is a bye-product, yet the amount is insignificant. The total amount of products, however, is by no means small and the black sulphuric dye stuffs are already over produced. Efforts are now being made to diminish the stocks by exporting it to Russia. The Japanese dye stuffs, in fact, are of inferior quality, those of superior character forming only a small portion of it, owing to defects in the method of manufacture and also to inferior materials.

Black dyes which come under the head name of the so-called sulphuric dyes are made of chips, dust and similar things and the black color is of only temporary nature. Chemical dye-stuffs are made from coal tar, but Japanese coal tar is much inferior to the American, which is higher in price. Manufacturers on a small scale are obliged to use the inferior kind by the want of means.

For the manufacture of the "methyl blue" or "methyl violet," wood spirit is necessary, the supply of which is not sufficient, while methyl alcohol obtained from the distillation of wood, is monopolized by the Naikoku drug-manufacturing and other companies, there being no surplus for the dye stuff companies. There is no probability of obtaining these in sufficient supply until the extensions of wood alcohol companies are completed.

Nippon Chemical Co.'s Progress.—The Nippon Chemical Industry Company held an ordinary general meeting of shareholders on June 20, to receive the Board's report on the working of the company during the past business term. The receipts of the term are said to be very large, as potassium chlorate has sold at extraordinarily high figures due to the favourable influences of the war, but the dividends on shares will not be increased proportionately, being limited to 25 per cent. per annum.

The Japan Safety Match Manufacturers' Guild on the other hand, has decided to renew the agreement, just expiring, to cut down production by 50 per cent. for another month, that is, from June 15 to July 15, in view of the precarious condition in which the chlorate and chemical market is placed. At a meeting of members in Osaka, it was stated that it would be advantageous to close the factories altogether, but the decision was modified and some manufacturers are to be allowed to continue their operations as they have had to fill the orders in hand.

Russo-Japanese Munitions Sales.—The aggregate amount of the munitions the Japanese Government sold to Russia since the outbreak of the War, according to the returns of the Department of Finance at the end of April, reached Y200,000,000, of which 77,000,000 and odd yen worth remains unsettled in regard to the delivery of both goods and price. The amount supplied from private sources to Russia is estimated at Y100,000,000.

Japan to Make Explosives.—On June 16 the Japan Explosives Manufacturing Company was duly organized, the Board of Directors being elected along with the Auditors. A quarter of the stock capital was paid in and with the conclusion of the organization the actual operations were commenced. The presidency of the new company was given to Lieutenant-General Morizo Oshiage on the reserve list who at once took charge of the manufacture of explosives, ordnance, and other military requisites.

Japan's Ammonia Plant.—The Electric Chemical Industry Company, which is under the control of the Mitsui Company, has decided to erect two new factories in Kumamoto and Manchuria for the production of sulphurous ammonia (ammonium sulphate?). At Kumamoto a contract has been arranged with the Kumamoto Electricity Company for the supply of power, and on the strength of the power supply contracted for, the scheme of the new factory has been drawn up. At the new factory sulphurous ammonia is to be manufactured out of nitrogen from the air.

In Manchuria the factory will be erected in the vicinity of Mukden, power being supplied by the South Manchuria Railway Company. At the Manchuria factory also sulphurous ammonia is to be manufactured from August next year on the same system. Thus the company's yearly production of sulphurous ammonia soon will be over 16,000 tons per annum.

Japanese Glass Companies.—The Nippon Glass Company, promoted by Messrs. Kyohei Magoshi, Sadajiro Shima, Shosuke Watanabe, Genjiro Yonei, and other business men to manufacture bottles for brewers, was formally organized at the first general meeting held at

the company's office in June. The company has a capital of 3,000,000 yen, paid up to the extent of 12.50 yen per share, and is operating two bottle manufacturing plants in Tokyo and Osaka. The maximum production of the company is 25,000,000 bottles a year.

Another big glass manufacturing company called the Far Eastern Glass Manufacturing Company with a capital of 1,500,000 yen is to be organized. The new company is to be controlled by a group of Osaka merchants connected with the Osaka Shosen Kaisha, the Osaka Iron Works, and kindred concerns. The maximum capacity of the new company's factories is to be 40,000 cases a year. Already contracts have been arranged with many cotton mills, railway companies, and other business concerns for the major portion of the output.

BUILDINGS

Foochow Y.M.C.A. and Hospital.—A new building for the accommodation of the Chinese Young Men's Christian Association was completed in 1915. It stands on the left bank of the river, near the bridge-head, and has all the improvements that such buildings have in America: business rooms, teaching and lodging accommodation, its own electrical plant, swimming bath, recreation rooms, etc., and an efficient staff, foreign and Chinese. It is a large red-brick and stone edifice built at a cost of $150,000.

A new hospital for women was opened, built at a cost of $60,000, with 150 beds. It has all the latest fittings of a first-class hospital, and a training school for nurses is attached. The Foochow Native Hospital increased its accommodation by the erection of a "Rennie Memorial Wing." The late Dr. Rennie was honorary physician and surgeon for a generation. The Bank of Taiwan rebuilt its premises on the bund, at a cost of about $30,000. A factory for drying egg yolk and albumen started work but soon stopped.

Amoy's Building Activity.—There has been considerable building activity both on Amoy Island and Kulangsu. A new building for the Bank of Taiwan, next to the Customs House, has recently been completed and is a distinct improvement on the usual type of structure in this region. On Kulangsu, unfortunately, there is a marked tendency towards overcrowding, and it is to be feared that in a few years' time residence on the island will have lost its former charm.

Kongmoon Building Operations.—During the year seven new Chinese houses were built a short distance away from the Custom House, and a large, two-storied foreign building about 500 yards south of the Customs premises has just been finished by the Standard Oil Company, of New York, to serve as residence and offices for its representatives. About 30 Chinese houses are in course of construction near the railway wharf, as well as a large school-house for the Canadian Mission inside the Mission's compound. At the Kongmoon city the new Native Custom House is nearing its completion.

INDUSTRIAL

Kongmoon Silk Filature.—The only steam silk filature there, owned by a Chinese named Lu Chienchu, had a fairly good season. The daily output was about 80 catties, and the price ranged from $800 to $1,200 per picul. The business transactions amounted to over $250,000. Most of the silk is sold to the foreign firms at Canton and partly reshipped to Japan.

The Kongmoon Paper Factory continues to make good progress, and an improvement in the quality of the paper is noticeable in the year's products. Also the Electric Light Company in Kongmoon town seems to have done good business.

Canton Cement and Tile Factory.—The Canton Cement Works produced about 145,000 casks of cement during the year, of which several thousand casks were exported to foreign countries and the remainder was divided between Hongkong and local demands. The turnout in 1915 is said to have increased 10 per cent. over that of the previous year. Recently one and a half working hours have been added to the daily schedule. Since June the cement works have manufactured a new species of decorated tile, of which more than 3,000 pieces are made each month.

The Canton Brick Factory has enjoyed a profitable year consequent upon the collapse of numerous houses and shops during the flood in July; and demand has always been largely in excess of supply. The price has consequently been forced up from $85 per 10,000 to $165 per 10,000. The Canton Paper Factory has done a fairly good business during the year; but besides supplying the government departments, it sells only a small stock for local consumption. Owing to the limited capacity of the plant, the factory has been unable to make any striking progress.

Canton Waterworks Extensions.—The Canton Waterworks has made further progress during the year. To the list of water consumers, 1,369 houses have been added, and 36 main and 9,678 minor pipes have been laid during the year. The output of water is 537,600 gallons per day, and this quantity is considered sufficient to meet the public needs. No extension was made for supplying water to outlying places, except to barracks in the eastern suburb. After defraying all expenses, a net dividend of 8 per cent. was declared for 1915. It is probably worthy of mention that the Canton government, in consequence of the impoverished condition of the treasury, sold all its shares to merchants in October, and that in consequence the company is now entirely under a commercial management.

Canton Industrial Bazaar.—A noteworthy event was the opening, in December, of the Canton Local Industrial Bazaar situated on the Bund. It is the first of its kind ever seen in Canton. In the face of the adverse conditions of the year and the general stagnation of business, it has not experienced a very profitable commencement, but it is stated to have good prospects for a prosperous future.

Pakhoi Pig Production.—Pigs, for which these parts have long been famous, form an important item on the list of exports. They are fattened here at a comparatively small cost, and in Hongkong there is a constant demand for them. They have been exported in increasing quantities for some years past, and during 1915 some 18,500 head, valued at Hk. Tls. 134,945, were shipped for Hongkong.

Shanghai Lamp Contract.—The General Electric Co. of China Ltd., has secured the contracts this year, in open tender, from the Municipal Councils of both the French and International Settlements for a year's supply of Osram half watt type electric lamps for street lighting throughout the Settlements. Osram lamps are of British make in the Company's own factory at Hammersmith.

Japan's Machinery Outlook.—Officials of the Mitsui Bussan Kaisha are quoted as saying that the exports of machinery soon will figure prominently in Japan's trade returns, partly because Japan's machine-making industry has lately achieved a striking development, and partly on account of the influence of the war on Europe's trade activities in the east.

Equipments for underwear factories including knitting machines which have so far been supplied either by Germany or America, are now being supplied by Japan. Spindles and linters are also sent by Japan to cotton mills in Shanghai and elsewhere. Cotton spindles and looms are exported to South China, British India, and the South Sea Islands. Australasia also is sending inquiries to Japanese machine shops. Accordingly, the market for Japanese machines is wide enough even at present, as the production has not kept pace with the increasing demand.

Swatow's New Industries.—The new industries that have been established in the district during the year are the Hsing Le Cotton Weaving Company, with a capital of $200,000, two companies—the Liang Fung and the Lee Cheong—for the manufacture of soap, and a number of small Chinese factories for the manufacture of iron pans with ore from the locality. The Electric Light Company at Swatow is now doing well, having been able to wipe off one-third of the losses incurred since its establishment—now six years. The Jinricsha Company, with its 400 vehicles running in the limited thoroughfares of Swatow, has made a profit of $10,000. A large modern theatre, capable of accommodating about 2,000 spectators, was added to the already numerous places of amusement. The Waterworks Company has not been able to work to its full capacity but is making good progress.

Industrial Progress of Swatow.—The American Consul in his report on the trade of Swatow for 1915 writes:—

A new cotton-weaving company, with a capital of $200,000 Mexican and a soap factory were established. Native handloom factories, which manufacture a cloth known as cotton stripe, did well, as the cloth is cheap and durable and the output is not great enough to meet the demand locally and among the Chinese in Siam and the Straits Settlements. The hand looms used in these factories were imported from Japan. The resumption of emigration to Siam, the Straits Settlements, and the Dutch East Indies stimulated the export of native produce, and thus improved local business conditions.

Japan's Factory Law Hits Many.—In connection with the promulgation of the Regulations for the enforcement of the Factory Law, the Department of Agriculture and Commerce has announced that the number of factories and workmen which the Factory Law covers are as follows:

	No. of factories	No. of Workpeople
Dyeing and weaving factories	13,249	567,587
Machinery factories	3,134	98,619
Chemical factories	3,225	93,423
Food and drinks factories	5,688	77,645
Miscellaneous factories	6,130	101,479
Special factories	129	9,552
	37,077	948,265

There are besides 47,597 male manual laborers, and 21,751 female manual laborers in Japan. The factory workpeople, according to sex may be classified as follows:

	Male.	Female.
Dyeing and weaving	81,106	486,481
Machinery	94,171	4,448
Chemical	63,627	29,796

Food and drinks	64,621	12,984
Miscellaneous	71,148	30,331
Special	9,284	268
Total.....	383,957	564,308

They are also classified according to age as follows:

	Male.	Female.
Under 12 years of age.....	1,039	2,012
12—14	9,247	31,753
14—16	24,937	91,527
16—20	66,607	201,924
Above 20	382,127	253,092

Three hundred and ninety-nine factories in Yokohama and Kanagawa prefecture were affected September 1 by the new factory regulations. The children who may be employed under the age of 10 years is limited to 32 factories. The details which must be changed include the limit of working hours, the restriction of holidays and resting hours, the method of relief work for workmen, the saving system of workmen, and the restriction of employing children 10 years of age. The hours of laborers are twelve hours a day, but they may be extended to fourteen hours in silk weaving and knitting factories.

U. S. Lumber to Orient.—Pacific Coast export lumber shipments for June totaled 22,513,387 feet, not including parcel shipments, according to figures issued by the West Coast Lumbermen's Association.

Fir figured in this to the extent of 18,026,135 feet and redwood 4,487,252 feet. In normal times with easy delivery at average rates, fir exports for June would average better than 67,000,000 feet.

The distribution of the June export cargoes as announced by the West Coast Association follows: United Kingdom, 6,907,202 feet; Australia, 7,853,270 feet: West Coast South America, 3,852,992 feet: China, 1,811,375 feet; Japan, 734,354 feet; Mexico, 441,504 feet; New Zealand, 625,585 feet; South Sea Islands, 239,659 feet; Sweden, 47,446 feet. Total, 22,513,387 feet.

Hongkong Needs Carbonic Acid Gas.—Before the outbreak of the present European war practically all of the carbonic acid gas used in Hongkong, other than that produced locally by a manufacturer of aerated waters, was imported from Germany, and since then dealers have fortunately been able to replenish their stocks from Manila. This latter source, however, has temporarily failed, and many inquiries for American gas are now being received by the Hongkong Consulate General. The local demand approximates 100 cylinders a year—a trade not large in itself, but important as opening up another line of American products in Hongkong.

Japan Woolens for Russia.—The Clothing Depot of the Imperial Japanese Army, upon receipt of an order from Russia for 3,000,000 yards of woolen cloth for military use valued at Y20,000,000, summoned some manufacturers of Osaka to Tokyo to confer with them. The manufacturers offered to execute the order to the extent of 2,500,000 yards for delivery by May next year.

U. S. Autos in Singapore.—Judging from the number of locally registered cars in Singapore, taken from a list published a few months ago, more money has been expended by Singapore people on the purchase of British cars than on foreign cars. There were 88 Fords, 69 Wolseleys, 47 Hupmobiles, 31 Stars 22 Daimlers, 22 Overlands, 21 Napiers, 20 B.S.A., 14 Rovers, 13 Arrol Johnstons, 12 Vulcans, and a number of other makes mostly running to single figures only.

But the continual inflow of American cars and the cessation of imports from England will make a considerable difference in these figures by the end of the current year.

Japan's Cotton Mill Industry.—The spinning mill industry is the most prominent of the industries of Japan. The number of spinning mill companies is now thirty-six with a total capital invested of over 86,000,000 *yen*. The number of spindles at work, according to the investigation made at the middle of June, was 2,763,000. The workmen employed in the mills number 23,590 males and 99,760 females, a total of 123,350. The output of yarns averages 160,000 bales a month.

Compared with conditions in 1906, ten years ago, there has been striking progress made, as may be seen from the following table:—

	First half of 1906 Yen	First half of 1916 Yen
Number of companies	48	36
Paid-up capital	50,932,238	86,011,677
Number of spindles...	1,483,497	2,763,000
Number of workmen and workwomen ...	79,881	123,350
	Bales	Bales
Monthly output	85,000	160,000

It will be observed that the number of spindles and the output have been doubled in ten years. The number of laborers has not made a corresponding increase, and this shows the increasing efficiency of the labor. The striking feature is that the number of companies has decreased from 48 to 36 and this shows the tendency toward amalgamation.

One thing which cannot be overlooked is that there is a strong tendency toward the increase of spindles and capital by various mills, and it is expected that at the end of this year there will be a further remarkable increase in these respects. It is planned that the number of spindles shall reach 900,000 by the end of the year, but since the importation of machinery is now difficult, it will probably be a year before those plans can be completed.

From a world viewpoint, Japan's spinning mill industry is still insignificant. The number of spindles at work last year was 138,917,969, and Japan's share was only a little over 2 per cent. Compared with the figures for England, which are about 57,000,000 spindles, Japan uses only about 5 per cent as many. This state of things is disheartening in some ways but in others it creates an impression that there is much room for progress, and it is a fact that the mill men are bent upon increasing their plants. Japanese manufacturers must look for a more promising field as an outlet for the goods produced. All mill men are agreed that Japan has to sell more to China and other countries in the South. The following is the list of exports of cotton yarns in the first half of this year to various destinations compared with those in the first of 1906:

	First half of 1906 Yen	First half of 1916 Yen
China	2,517,000	6,923,000
Kwantung leased territory	—	144,000
Chosen.....	295,000	198,000
Hongkong	132,000	661,000
India.....	10,000	214,000
Philippines	119,000	33,000
Others	2,000	22,000
Total.....	3,078,000	8,197,000

The exports to China have been more than doubled in ten years, the exports to Hongkong have become five times as large and to India twenty times as large as ten years ago.

Paper Industry of Japan.—Three leading business men, Baron Shibusawa, Mr. H. Ogawa, and Mr. K. Makoshi are promoting a paper mill project for the Hokkaido. The new company will be styled the Kushiro Paper Manufacturing Company, of Toritori, Hokkaido, and will instal paper making machines made in Japan which will be completed by June, 1918. A water power station is planned by the company at Lake Oakan to drive the mill. The capital of the new concern will be Y5,000,000 and it is proposed to produce 2,500,000 lbs. of Chinese paper a month and common news. Three 110-inch machines will be used, with Ogawa cylinders.

During the last few months great quantities of pulp were imported into Japan. As the best season is approaching prices are stiffening. Fine unbleached sulphur pulp, which has been as low as 3 sen 2 rin is now quoted at 10 sen the lb. Foreign quotations are high, unbleached fine grades quoted at 13-14 sen free at Yokohama.

The Jiji states that the Oji and Fuji Paper Mills and the Nagai Shoten have been in negotiation with Russian traders for the sale of various qualities of foreign paper. The quantity required by the Russians is stated to be 25 million lbs. and the value Y4,000,000. At one time an agreement seemed likely, but the terms of payment offered by the Russians are not acceptable.

Chinese Paper Mill for Harbin.—An enterprising Chinese merchant, Mr. Wu, of Harbin, believing that the establishment of a paper mill there would stop the import of foreign paper, which runs up to a considerable amount annually, has organized a company on a capital of S. Y100,000, to engage in the manufacture of paper for journalistic and Government use. The necessary machinery has been bought in Shanghai. It is said that the Company has secured the exclusive concession for manufacturing paper for a term of ten years.

Japanese Paper to Australia.—It was recently reported that two leading newspaper houses in Australia had placed an order with Japanese mills for a large amount of printing paper. Now it is learned that the Fuji Paper Mill has signed a contract for shipment of 250 tons, or 560,000 pounds. The amount is not large, but it is noteworthy that it is the first instance that Japanese printing paper has been ordered from Australia. The price is said to be far higher than the quotations in the home market. Negotiations are being made for subsequent shipment of 200 tons a month for five months, beginning in October.

Japanese Matches Sold in America.—The war has made the prospect for Japanese matches in the United States better. The consumption in the southern part of California, for instance, has for years been divided between the products of the Diamond Company, more than 40 per cent; the Swedish and Norwegian matches, over 40 per cent, and Japanese goods, a little over 10 per cent. Since the war began, however, the supply of Swedish and Norwegian matches has practically been stopped, and American and Japanese goods alone are now being consumed. American and Japanese matches filled the gap in the proportion of 25 per cent to the Diamond Match Co. and 75 per cent to the Japanese. It is reported that the Diamond Match Company is now contemplating placing plants in China where the cheaper materials can be had and where wages are low, so that the company may not only command a large market in China, but also supply the cheaper goods to the United States if possible.

General Electric Sues Japanese Co.—Seeking protection for its patent on a certain type of tungsten lamp and damages to the extent of 100,000 yen, the General Electric Company of New York, represented by Mr. J. R. Geary of Yokohama, has filed suit in the Tokyo District Court against the Nippon Electric Lamp Company.

The General Electric alleges that the Nippon Company has infringed its patent on a type of tungsten lamp, invented by one of the company's employees and registered in Japan. Recently, it is alleged, the defendant company has been manufacturing and selling lamps similar to the General Electric Company's tungsten lamp without the consent of the plaintiff.